

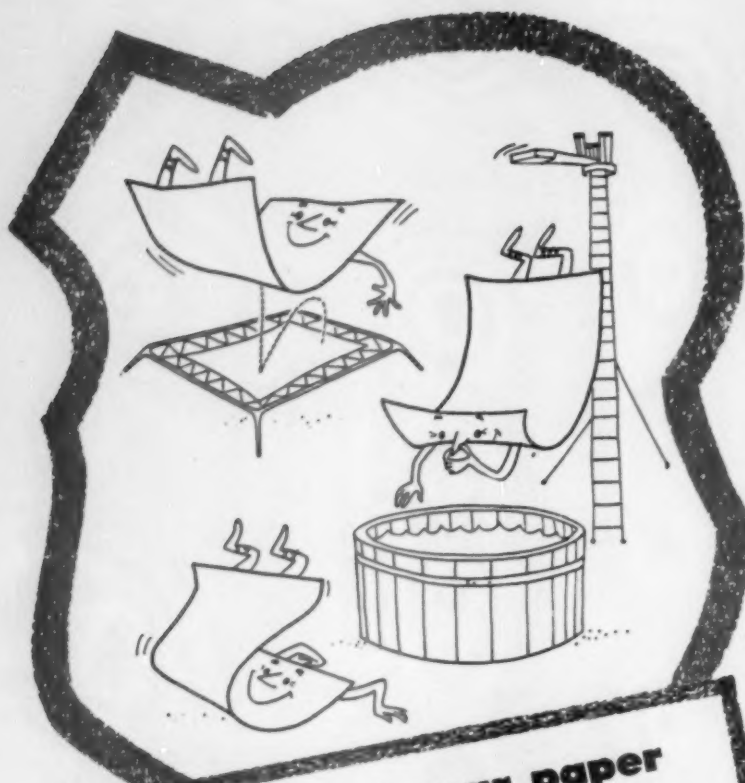
PULP & PAPER

WORLD
Review Number
1955

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of Paper and Paperboard . . .
Free World Makes 92% of All
Pulp and Paper . . . Exports Boom



28th Review Number . . . with World Market Pulp Directory



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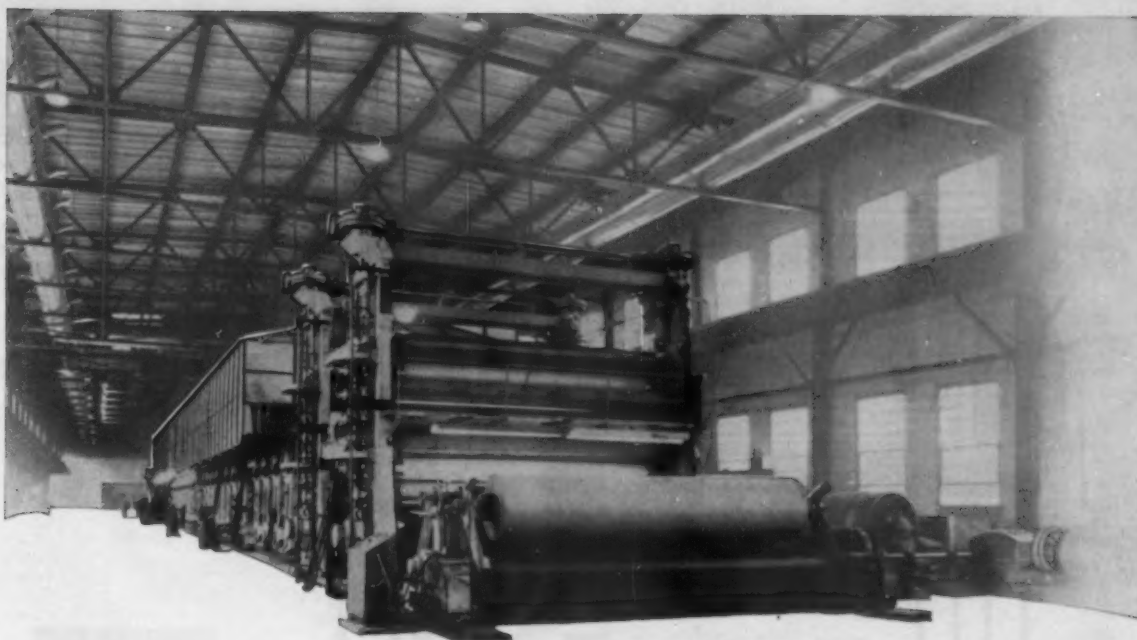
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1955 Review Number—PULP & PAPER

PULP & PAPER

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Magazine
of the Industry

VOLUME 29

NUMBER 8

July 25, 1955

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MILLER FREEMAN PUBLICATIONS

1955 World Review Number—Editorial Contents

Associations and Institutions Directory 6

WORLD PULP TRENDS

For Further Expansion, World Looks to America for Pulp 80
World Pulp Trade Map 88
Directory of World Market Pulp 91
What's Ahead for Dissolving Pulp, by Rex Vincent 120

WORLD PAPER TRENDS

Free Nations Make 92% of All Paper, Board and Pulp 132
UNITED STATES—New Production Records Will Be Set 135
United States Statistical Tables 142
CANADA—A New Burst of Expansion 154
Canadian Statistical Tables 151
UNITED KINGDOM—Many Companies Merge 162
WEST GERMANY—Phenomenal Recovery Continues 164
FRANCE—Records Again Fall 166
SOVIET RUSSIA—Conflicting Reports on Output 167
EAST GERMANY—Pre-War Mill Capacities Disappear 170
CZECHOSLOVAKIA—Big Producer Among Satellites 170
POLAND—Aims to Double Production 170
RUMANIA—Scant Information Available 171
BULGARIA—Adding to Capacities 171
HUNGARY—Soviets Boosting Paper Production 171
PORTUGAL—Big Jump in Pulp Output 171
NORWAY—Breaks 18-Year Pulp Record 172
SWEDEN—Many Records Tumble 176
FINLAND—New Forest Survey Cheers 178
NETHERLANDS—Biggest Year for Dutch Mills 180
AUSTRIA—No. 3 Industry of Nation 182
SWITZERLAND—How Industry Has Grown since 1411 184
ITALY—Pulp Imports Rise, Output Declines 186
BELGIUM—Competitive Obstacles Removed 188
YUGOSLAVIA—Pulp Exported Westward 190
SPAIN—Paper Replaces Wood Boxes 192
DENMARK—First Chemical Pulp Mill 192
IRELAND—Irish Building Up Industry 194
GREECE—May Build First Pulp Mill 195
INDIA—How It Built First Newsprint Mill 196
PAKISTAN—To Build New Mill on Ganges 198
JAPAN—Drastic Deflationary Measures 200
ISRAEL—First Mill Already Expands 203
TURKEY—Plans 150% Increase in Output 204
TAIWAN—U.S.A. Builds Mills, Enlarges Others 206
HONG KONG—Brisk Trading with Red China 206
PHILIPPINES—Two Mills Add New Facilities 208
RED CHINA—Most Paper Made by Small Size Mills 209
REST OF ASIA—Bamboo, Hardwoods for New Mills 210
BRAZIL—Expansion Potentials are Great 212
CHILE—Big Plans for Using Pine 213
MEXICO—Story of All Mexican Expansion 214
CUBA—Announces New Process Mill 218
ARGENTINA—Self-Sufficiency Still Its Goal 218
COLOMBIA—CCA Will Increase Mill Capacity 220
PERU—Grace & Co. in Big Expansion 220
GUATEMALA—Lemon Grass Mill Starts Up Again 224
ECUADOR—Building Modified Kraft Mill 224
REST OF AMERICA—Potentials Studied 224
NEW ZEALAND—Radiata Pine Booms Growth 228
AUSTRALIA—Industry Keeps Expanding 232
HAWAII—Dreams of Market Pulp Mill 236
SOUTH AFRICA—Mills of All Kinds Being Built 240
EGYPT—Plan Mill to Use Papyrus 242
NORTH AFRICA—More Mills to Use Grasses 244
MIDDLE AFRICA—Mills Built in Remote Lands 244
BELGIAN CONGO—May Use Papyrus 245

COVER PICTURE: On a busy New York City street, paper
cartons and paper wrappings help American business to boom,
as paper production climbs to new highs. Photo courtesy Union
Bag & Paper Corp.

How to Convert Statistics

Short tons are used as measure of pulp, paper, etc., in this
WORLD REVIEW. These figures can be quickly converted.
A short ton equals 0.907 metric tons. A short ton is 0.893 long
tons. A metric ton is 1.102 short tons. A long ton is 1.12 short
tons or 1.016 metric tons. A kilogram equals 2.2046 lbs. (there
are 1,000 kilos in a metric ton; 2,000 lbs. in a short ton);
Multiply a kilogram by 2.205 to obtain pounds.

One cord equals 2.35 cubic meters (a meter equals 39.37
inches), or 90 cu. ft. of wood, not counting air space. But
usually wood and air space are counted, which would be 128
cu. ft. or 3.62 cu. m.; A hectare equals 10,000 square meters,
or 2.47 acres; two cords are generally accepted as equal to
1,000 bd. ft.

PULP & PAPER renews an old Crusade:

What the Free World Needs

- PULP & PAPER magazine is now in its 29th year.

It was hardly half that old when it launched an editorial campaign which it renewed from time to time through the years.

All alone, PULP & PAPER took up the almost "lost cause" of the North American woodpulp industry—arguing that it was essential that such an industry must continue to grow, to be healthy and strong, in the best public interests of the United States and the whole Free World.

When three United States woodpulp mills were summarily shut down, simply by an arbitrary government order denying them any more logs, PULP & PAPER's editorial campaign went into high gear. It was far from being a popular cause. This was early in World War II, when Washington officials thought lumberjacks ought to be working in shipyards, or else be in uniform.

All alone (no other magazines or newspapers raised their voices), PULP & PAPER, in issue after issue, warned of the importance of woodpulp to national defense.

NOW, THE FREE WORLD DEPENDS ON IT—Now, in 1955, we see a North American woodpulp industry so strong that both the prosperity and defense—to a great extent—of the whole Free World rest upon it. North America is a net exporter of woodpulp for the first time in its history. The Scandinavian nations are still the solid historic backbone of the world's market pulp supply. They produce 63% of it. But if Free World nations are to have more woodpulp in future years, which they must have to continue their economic growth and build up their inherent strength, they must look to North America. This is certainly true in Europe. And in Latin America, where quality North American pulps are used as an essential mixture for native wood, bagasse or other pulps.

A GENUINE FREE ENTERPRISE—We hasten to add that PULP & PAPER's support of the North American woodpulp industry—even when such support was far from being popular—was never "official." In fact, it is proud to be identified with an industry which has grown strong and stable without any official assistance of any kind—a genuinely great "free enterprise."

However, its editorial crusade has been responsible for the calling of official conferences in Washington, and for many official discussions which slowly but surely led to a revised opinion of the woodpulp industry.

If the paper industry, the paperboard industry and the rayon-acetate industry of America are sound and stable today, much credit is due to a sound and stable woodpulp industry of North America. Much credit also is due to their Scandinavian friends, but it is vital that the North American sources serve, too.

By the same token, if such pulp-using industries are to grow and prosper in every other Free nation and Free continent, the margin of expansion will be made possible by this same North American woodpulp industry. That's the eminence on which a great "grown-up" North American market woodpulp industry stands today, standing now alongside its older, more worldly-wise Scandinavian Free World ally.

"Many Hands and Hearts"—Acknowledgements

This annual WORLD REVIEW NUMBER of PULP & PAPER has been called the "Encyclopedia Britannica" of the industry. It is the most complete publication of its kind in the world—replete with statistics, reviews, forecasts and colorful reports from close to 50 different countries.

It is independently gathered, organized, prepared and presented by PULP & PAPER's own staff. Many statistics published here are to be found nowhere else. And, of course, this is true of all the reports.

But we acknowledge the help of many hands and hearts. Many of these we count now as old friends of this WORLD REVIEW NUMBER and of PULP & PAPER. They have contributed their thoughts, observations, interpretations to this issue again this year.

From our own field staff, and with assistance of many government and industry officials or executives in the U.S.A. and Canada, too numerous to mention, came the sections on those countries. But contributing to other reports were: The Swedish Cellulose Assn.; Juoko Koljonen, Central Assn. of Finnish Woodworking Industries; Oyvind Nossen, Norway's Forest Industries' Economic Institute; individual Scandinavian mills; the British Paper and Board Mfrs. Assn.; President Max Schmid of West Germany's Waldhof mills; Henk Voorn, Dutch paper magazine editor; Siegfried Aeshbacher, manager of Switzerland's Balsthal Mills, and the Swiss association; William F. Boks, pulp broker of Antwerp; H. Vincent and J. Polsky of Papeteries de Belgique; President Carvalho of the Portuguese Cellulose Co.; President Sabates of Spain's biggest paper industry; Henri Jegu, vice president of American Library, France; Gerard Lourdelet of France's Lourdelet-Maricot Mills; Jean Usse of France's Celulose du Pin mill; Austria's Pulp and Paper Assn.; the Consulate General for Ireland in U.S.A.; Dr. Pietro Ghisone, of Italy's Vita Mayer mill; the Italian association and Snia Viscosa, Italy's rayon-cellulose mill builders; Milos Macura, Yugoslavian statistical office deputy director; E. Persson of Denmark's United Paper Mills;

K. Miyahara, of Goshu Co., Y. Mikasa, of Kokoku Co., and Tom Iwata of Takahashi & Co., all for Japan; Anker B. Henningsen, veteran Hong Kong trader; A. R. Entrican, New Zealand's chief forester; Eric Crane, production mgr. of Australian Paper Mills Ltd., and other Australians; M. Goldberg, manager of American Israeli Paper Mills and D. Dubiner, partner in Israel's new Cargal Co.; Selahattin Akyol and Fahir Siparhi, Turkey's Sumerbank directors; Manager Li-Li and Engineer Ni-Hung Chan of Taiwan Pulp & Paper; S. C. Laharry, *Indian Pulp & Paper* editor; Dr. R. V. Bhat, head of India's pulp and paper research; Dick Sandwell, Canadian engineer, and Ebasco engineers active in India and Pakistan developments; President Alex Adamson of Philippine Paper Mills and Manager M. Rivers of Celulosa de Filipinas;

Carlos Garcia Robles, Mexico City engineer; Meredith Parker, pulp salesman-movie producer of Mexico City; President Hans Lenz of Mexico's Lenz mills; Jose de la Macorra II, manager of the San Rafael mills; Manuel del Castillo, Mexican manufacturers' representative; Julio Cesar Lera, Argentine financial house vice president; Alfredo Mastrakola, Peruvian engineer; Minor Kielbauer, Guatemalan industrialist; Bud Collett, manager of West Virginia Pulp Paper's mill in Brazil; Carlos Benko, Brazil editor and mill manager; Grace & Co. in Peru; Dr. L. Rys, general mgr., Industrias Klabin do Parana de Celulose S.A.; Antonio Bascunan P., general mgr., Compania Manufacturera de Papeles y Cartones S.A.; Carlos Benko, Companhia Santista, Sao Paulo, Brazil;

J. E. Henderson, manager of South African Pulp & Paper Industries, Ltd.; Hans Baars, Dutch and South African roving engineer; Dr. Hilmy Mattar, Egypt's industry department director; C. Brau, Belgian Congoland official; T. J. Nelson of Hawaiian Sugar Planters Association;

and others we are not privileged to mention.

We also acknowledge much assistance given by the American Paper & Pulp Association, United States Pulp Producers Assn., the U.S. Department of Commerce, U.S. Census Bureau, U.S. Forest Service, Canadian Pulp & Paper Assn., Canadian Newsprint Assn., and similar agencies in many countries.

Many of these indicate in their letters that they are just as proud of PULP & PAPER's WORLD REVIEW NUMBER as though they were regular members of the staff. To one and all we say—congratulations, then, as well as thanks.

"... Here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

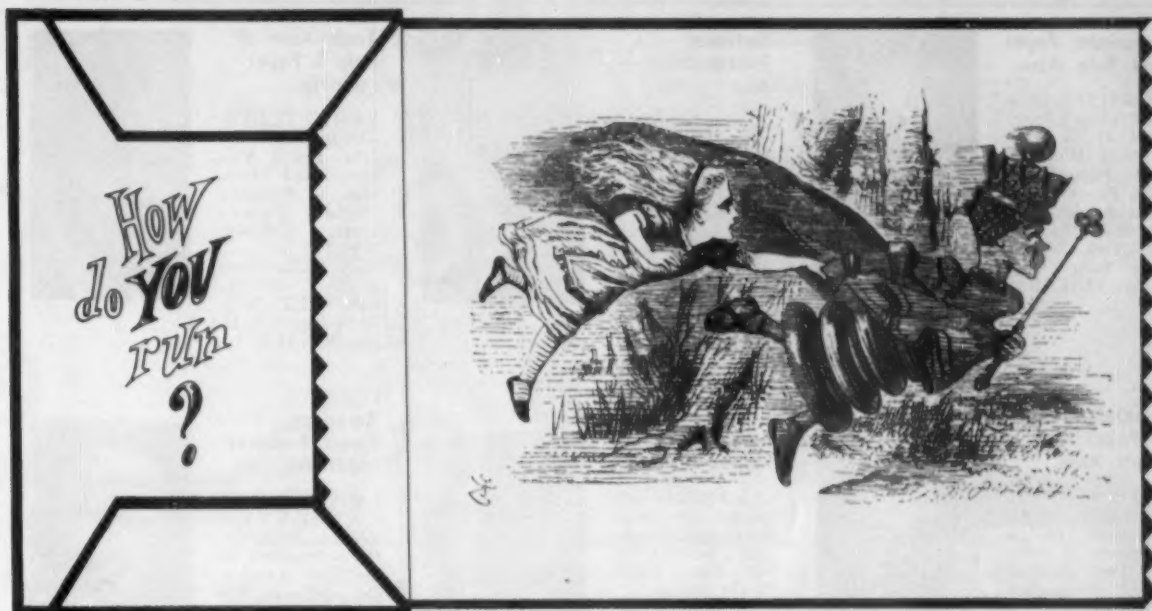
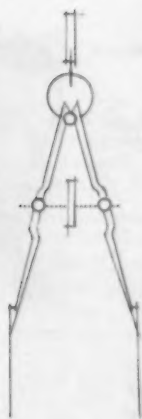


ILLUSTRATION BY JOHN TENNIEL FROM "THROUGH THE LOOKING-GLASS" BY LEWIS CARROLL



The Queen's advice was timely for travelers in Wonderland . . . and for forward-looking American industry, as well. It takes all the running you can do to keep in step with the current course of business . . . it requires a "plus" to grow.

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PULP & PAPER's 1955-56 Directory of

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Associations and Institutions in the United States and Canada

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DONALD S. LESLIE (photo), *President*. He is President of Hammermill Paper Co., Erie, Pa. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Exec. Secy.-Treas.*, E. W. TINKER.



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Tech. Assn. of Pulp & Paper Industry

KARL O. ELDERKIN (photo), *President*. He is Vice Pres. and Gen. Mgr. of Bowaters Southern Paper Corp., Calhoun, Tenn. Assn. headquarters at 135 E. 44th St., New York 17, N. Y. *Secy.-Treas.*, R. D. MACDONALD.



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HOWARD H. STREET (photo), *President*. He is Manager of Yorklyn, Del., plant of Natl. Vulcanized Fibre Co. Assn. headquarters at 327 S. LaSalle St., Chicago 4, Ill. *Secy.-Treas.*, HARRY E. WESTON.



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L. J. FREEDMAN (photo), *President*. He is with Penobscot Chemical Fibre Co., Great Works, Maine. Assn. headquarters at 220 E. 42nd St., New York 17, N. Y. *Exec. Secy.-Treas.*, W. S. BROMLEY.



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LEONARD G. CARPENTER (photo), *President*. He is President of McCloud Lumber Co., Minneapolis, Minn. Assn. headquarters at 1816 N. Street N. W., Washington 6, D. C. *Managing Dir.*, CHAS. A. GILLET.



Assn. of Pulp Consumers Inc.

LANE TAYLOR (photo), *President*. He is President of W. C. Hamilton & Sons, Miquon, Pa. Assn. headquarters at 250 Park Ave., New York 17, N. Y. *Secy. & Treas.*, REED R. PORTER.



U. S. Pulp Producers Assn. Inc.

JAMES L. RITCHIE (photo), *Executive Director*. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y.



Forest Industries Council

TRUMAN W. COLLINS (photo), *Chairman*. He is with Collins Pine Co., Portland 5, Oregon. Assn. headquarters at Rm. 406, 711-14th St. N. W., Washington 5, D. C. *Secy.*, T. H. MULLEN.



Newsprint Service Bureau, Inc.

A. G. WAKEMAN (photo), *President*. He is President of Coosa River Newsprint Co., Coosa Pines, Ala. Assn. headquarters at 342 Madison Ave., New York 17, N. Y. *Secy.-Treas.*, JOHN J. ZIMA.



Southern Pulpwood Conservation Assn.

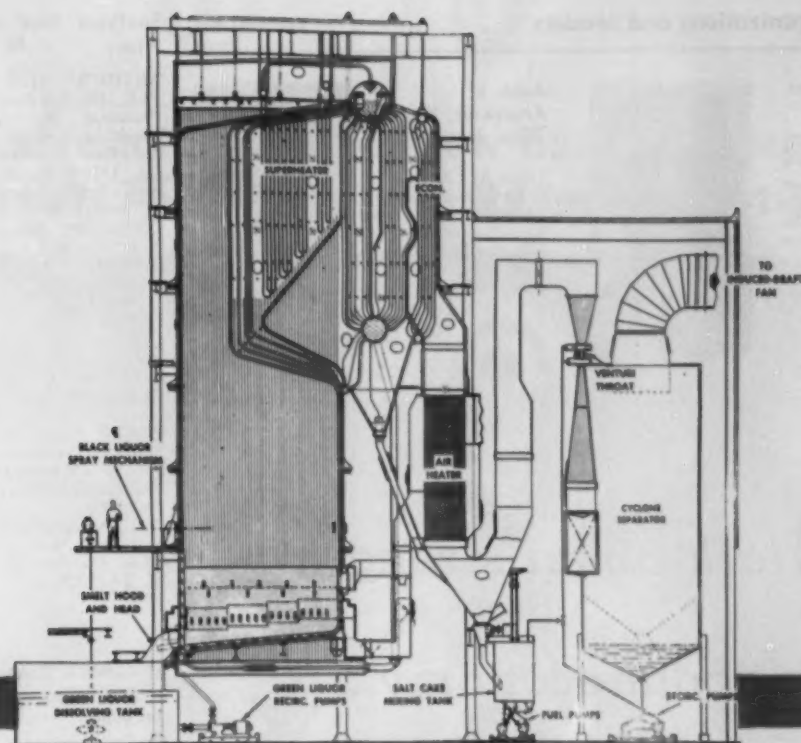
K. S. TROWBRIDGE (photo), *President*. He is Manager, Wood and Land Dept., North Carolina Pulp Co., Plym-outh, N. C. Assn. headquarters at 1224 Peachtree St., N. E., Atlanta 5, Ga. *Gen. Mgr.*, HENRY MALSBERGER.



Pacific Coast Assn. of Pulp and Paper Manufacturers

R. S. WERTHEIMER (photo), *President*. He is Vice Pres. & Gen. Mgr., Longview Fibre Co., Longview, Wash. Assn. headquarters at American Bank Bldg., Portland 5, Ore. *Secy.*, S. W. CRIMES.





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Assn. of American Wood Pulp Importers

DR. ALLAN C. HILL (photo), *President*. He is Vice Pres. of Montmorency Paper Co., New York City. Assn. headquarters at 290 Madison Ave., New York 17, N. Y. *Secy.*, PER WESTAD.



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ARTHUR TEMPLE, JR. (photo), *President*. He is President of Southern Pine Lumber Co., Diboll, Texas. Assn. headquarters at Natl. Bank of Commerce Bldg., New Orleans, La. *Secy.-Mgr.*, S. P. DEAS.



Trees for Tomorrow, Inc.

FOLKE BECKER (photo), *President*. He is Chairman, Rhinelander (Wis.) Paper Co. Assn. headquarters at Merrill, Wis. *Exec. Director*, M. N. TAYLOR.



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LARRENCE E. GRAHAM (photo), *President*. He is with International Paper Co., 220 E. 42nd St., New York 17, N. Y. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Secy.-Treas.*, MISS ANNE G. TOOMEY.



Sulphite Pulp Manufacturers' Research League, Inc.

STANTON W. MEAD (photo), *President*. He is President of Cons. Water Power & Paper Co., Wis. Rapids, Wis. Assn. headquarters at 1101 E. South River St., Appleton, Wis. *Tech. Dir.*, A. J. WILEY.



Kraft Paper Assn. Inc.

H. S. DANIELS (photo), *President*. He is Exec. Vice Pres. of Union Bag and Paper Corp., New York 7, N. Y. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Secy.-Treas.*, DERNELL EVERY.



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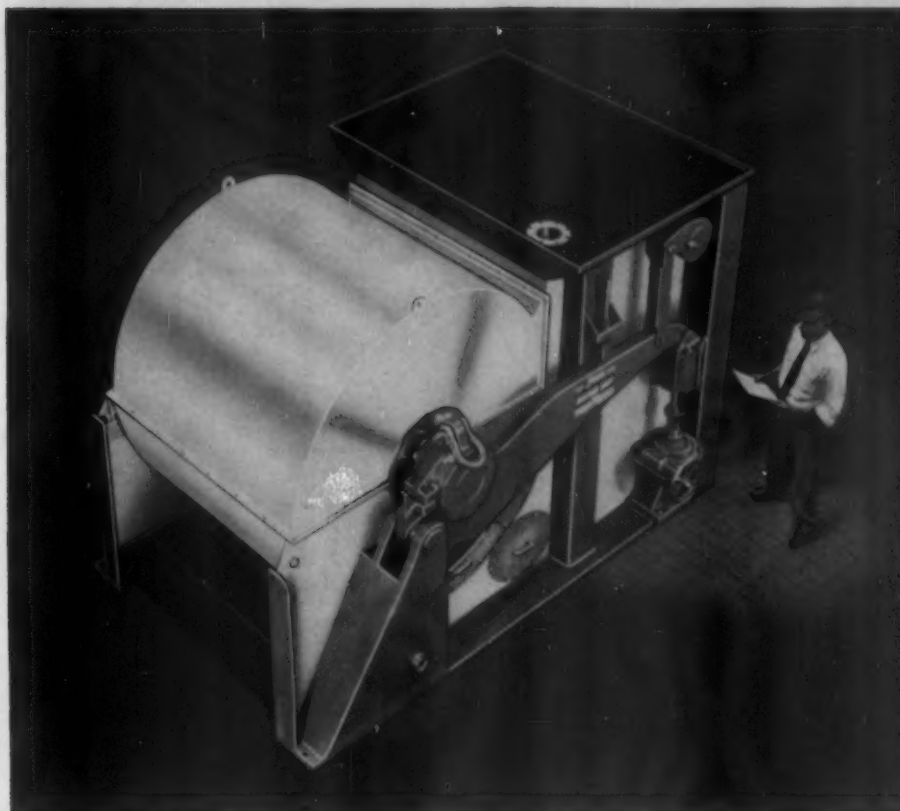
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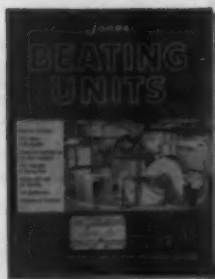
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Sulphite Paper Mfrs. Assn., Inc.

NEIL E. NASH (photo), *Gen. Chairman*. He is Vice Pres. and Secy., Nekoosa-Edwards Paper Co., Port Edwards, Wis. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Secy.-Treas.*, THOMAS J. BURKE.



Paper Napkin Assn., Inc.

R. L. FENSTAMAKER (photo), *Chairman*. He is Secy. of C. A. Reed Co., Williamsport, Pa. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Secy.-Treas.*, ARLO WILSON.



Tissue Assn., Inc.

WAYNE A. BROWN (photo), *President*. He is Asst. Vice Pres. of Crown Zellerbach Corp., New York 17, N. Y. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Exec. Secy.*, ROSS A. FIFE.



Glassine and Greaseproof Mfrs. Assn.

WILFRED A. WYLDE (photo), *Chairman*. He is Exec. Vice Pres. and Dir. of Deerfield Glassine Co., Monroe Bridge, Mass. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Secy.-Treas.*, THOMAS J. BURKE.



Waxed Paper Institute, Inc.

D. A. SNYDER (photo), *Chairman*. He is Vice Pres., Food Pkg. Sls., Marathon Corp., Menasha, Wis. Assn. headquarters at 38 So. Dearborn St., Chicago 3, Ill. *Exec. Dir.*, LAURENCE T. HERMAN.



Groundwood Paper Mfrs. Assn.

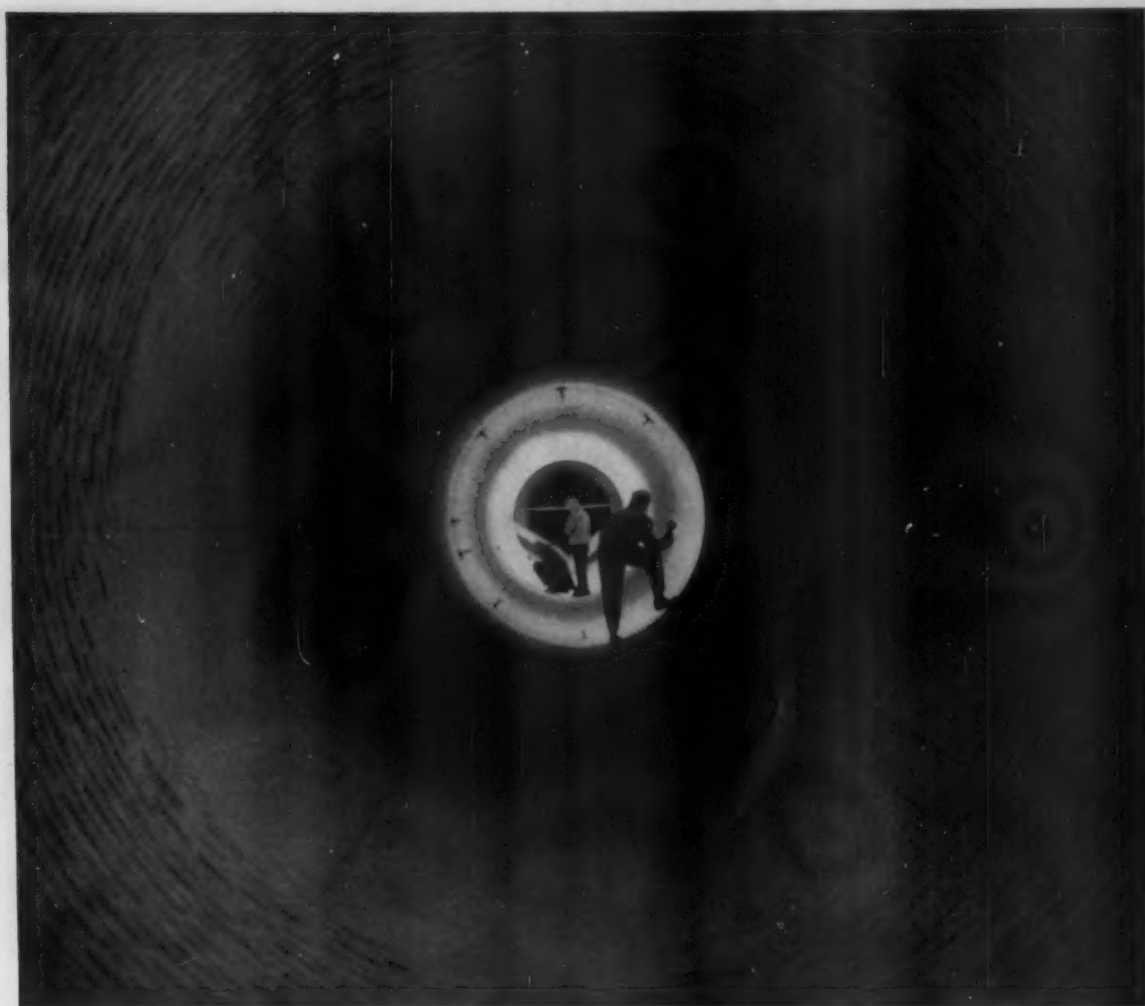
SAMUEL PRUYN (photo), *President*. He is Vice Pres. of Finch, Pruyne & Co., Glens Falls, N. Y. Assn. headquarters at 122 E. 42nd St., New York 17, N. Y. *Secy.-Treas.*, R. E. CANFIELD.



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2816

PULP & PAPER—1955 Review Number

11

National Council for Stream Improvement

GEORGE E. DYKE (photo), *Chairman*. He is Pres., Robt. Gair Co., Inc., New York City. Assn. headquarters at 271 Madison Ave., New York, N. Y. *Exec. Secy.*, **RUSSELL L. WINGET**.



Paper Bag Institute, Inc.

T. H. MITTENDORF (photo), *President*. He is Vice Pres. Chge. of Sales, Hudson Pulp and Paper Corp., New York City. Assn. headquarters at 369 Lexington Ave., New York 17, N.Y. *Dir. & Treas.*, **WILLIAM R. GARDINER**.



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MALCOLM B. LOWE (photo), *President*. He is Vice Pres. of Lowe Paper Co., Ridgefield, N.J. Assn. headquarters at 122 E. 42nd St., New York 17, N.Y. *Secy.-Treas.*, **G. D. COOK**.



Paper Shipping Sack Mfrs. Assn., Inc.

W. J. DIXON (photo), *President*. He is Vice Pres. and Dir. of St. Regis Paper Co., New York City. Assn. headquarters at 370 Lexington Ave., New York 17, N.Y. *Exec. Secy.*, **FRANK POCTA**.



The Wisconsin Paper Group

R. W. MAHONY (photo), *President*. He is President of Appleton Coated Paper Co., Appleton, Wis. *Exec. Secy.*, **IRWIN PEARSON**, Neenah, Wis.



Institute of Paper Chemistry

WESTBROOKE STEELE (photo), *President*. Institute is at Appleton, Wis. *Vice Pres.-Treas.*, **JOHN STRANGE**; *Secy.*, **C. B. SITTERSON, JR.**



U. S. Forest Products Laboratory—Pulp and Paper Div.

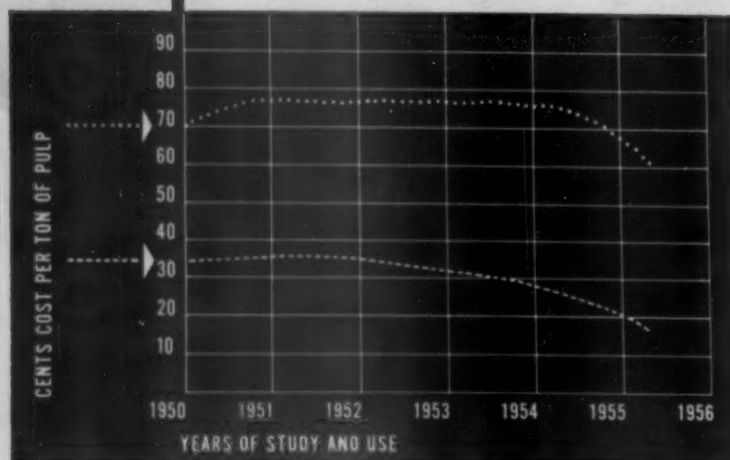
GARDNER H. CHIDESTER (photo), *Chief of Division*. Laboratory is at Madison, Wis.



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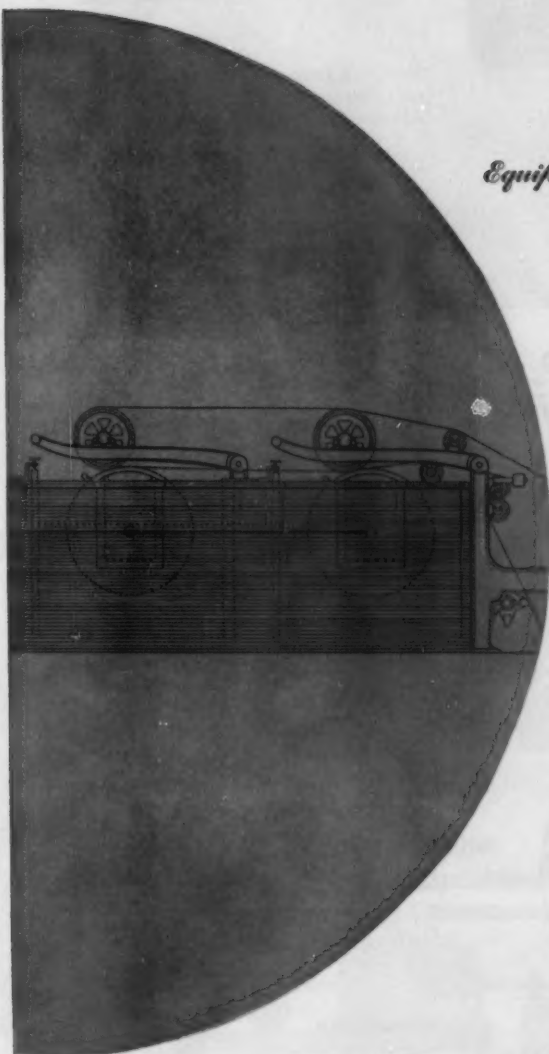
75

Years of Progress

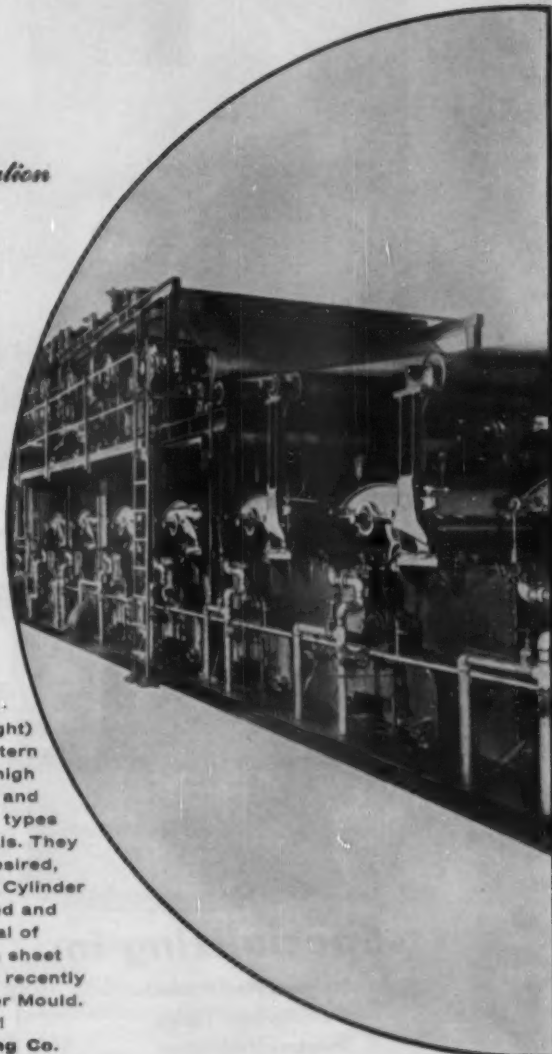
IN

Equipment for Sheet Formation

1880 • 1955



Seventy-five years ago the Downingtown Cylinder Machine (left) embodied the latest improvements then available, but it was a far cry from the modern seven-cylinder board machine (right) recently installed in an eastern mill. Today, Downingtown high speed, high efficiency vats and moulds are furnished in all types of corrosion resisting metals. They are also equipped, when desired, with Downingtown Suction Cylinder Couch for even faster speed and better quality board. Typical of Downingtown leadership in sheet formation equipment is the recently developed Vacuum Cylinder Mould. Consult Downingtown now! Downingtown Manufacturing Co. Downingtown, Pa.



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75th year

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College of
Forestry**

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(photo), *Chairman*,
Dept. of Pulp and
Paper Technology,
Syracuse, N. Y.



**Western
Michigan
College Pulp
and Paper
Technology
Department**

DR. ALFRED H.
NADELMAN
(photo), *Head of
Dept.*, Kalamazoo,
Mich.



**Univ. of Maine
Pulp & Paper
Foundation**

J. L. OBER (photo), *President*. He is Vice Pres., Scott Paper Co. Secretary, HENRY W. FALES. He is Vice Pres. and Gen. Mgr., St. Croix Paper Co., Woodland, Me.



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and Paper
Alumni**

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(photo), *President*. He is Mgr. of Prod. Coordination & Procurement, Ohio Boxboard Co., Rittman, Ohio. Secy.-Treas., JAMES CASEY, A. E. Staley Mfg. Co., Decatur, Ill.



**North Carolina
State College,
School of
Forestry**

PROF. C. EARL
LIBBY (photo),
*Head of Dept. of
Papermaking*, Raleigh, N. C.



**Book Paper Mfrs.
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IN CANADA

**Canadian Pulp
and Paper Assn.**

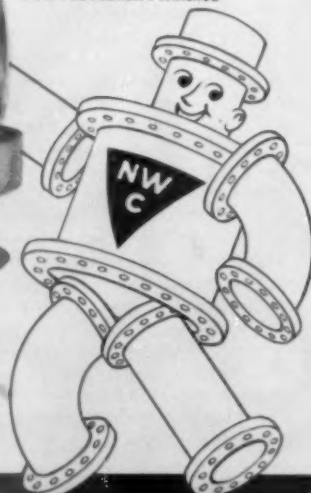
ARTHUR A.
SCHMON (photo),
Chairman. He is
President, Ontario
Paper Co. Ltd.,
Thorold, Ontario.
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*Typical Illustration of Stainless
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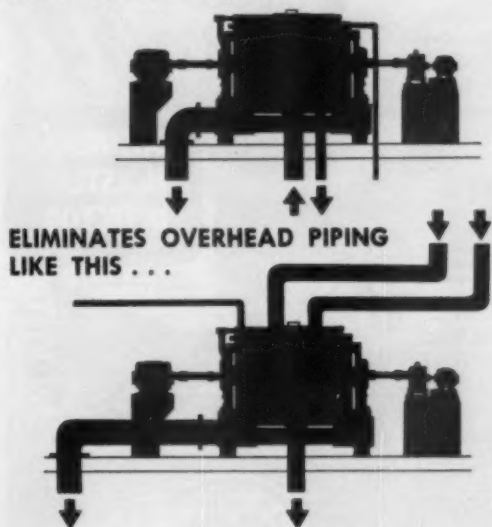
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These higher density type vibrating units are delivering quality pulps at densities above 1.5% A.D. in bleached, unbleached, semi-chemical and board mill installations.

For complete information on this screen, send for Bulletin B4-1.

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He is Mill Man-
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Section headquar-
ters at 2280 Sun
Life Bldg., Mont-
real, Que. *Exec.*
Secy., DOUGLAS
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**Woodlands
Section, CPPA**

**H. ARTHUR
SEWELL** (photo),
Chm. of Exec.
Council. He is
Vice Pres., Wood-
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Paper Co., Ltd.,
Thorold, Ontario.
Assn. headquarters
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Bldg., Montreal,
Que. *Manager*, W.
A. E. PEPLER.



**Pulp & Paper
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Institute of
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Headquarters at 77
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MURCO
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To the paper industry we offer a specialized service based upon over seventy years close association with the needs of paper manufacturers. Write today for complete catalog information on any items in which you are interested . . . no obligation for our Engineering Department recommendations.

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at BOWATERS TENNESSEE MILLS



**An outstanding
installation at
one of the country's
finest pulp and paper mills!**

The advanced design and quality-controlled workmanship of Goslin-Birmingham Evaporators has contributed substantially to higher efficiencies in the Black Liquor recovery systems of many of the country's leading pulp and paper mills. This new, modern installation at the recently completed Charleston, Tennessee, plant of Bowaters Southern Paper Corporation is typical.

The G-B sextuple effect long tube, film-type Evaporators for this installation are designed to evaporate approximately 200,000 lbs. per hour of water-vapor, thereby concentrating the Black Liquor from a 14% to a 55% solid.

**G-B Engineers are always available to
work with you on your problem ...**



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newly developed—

free-flowing—

water-dispersible—

Permanent Red TPF Paste



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We offer full cooperation on all your paper coloring and paper matching problems; we invite your inquiry.

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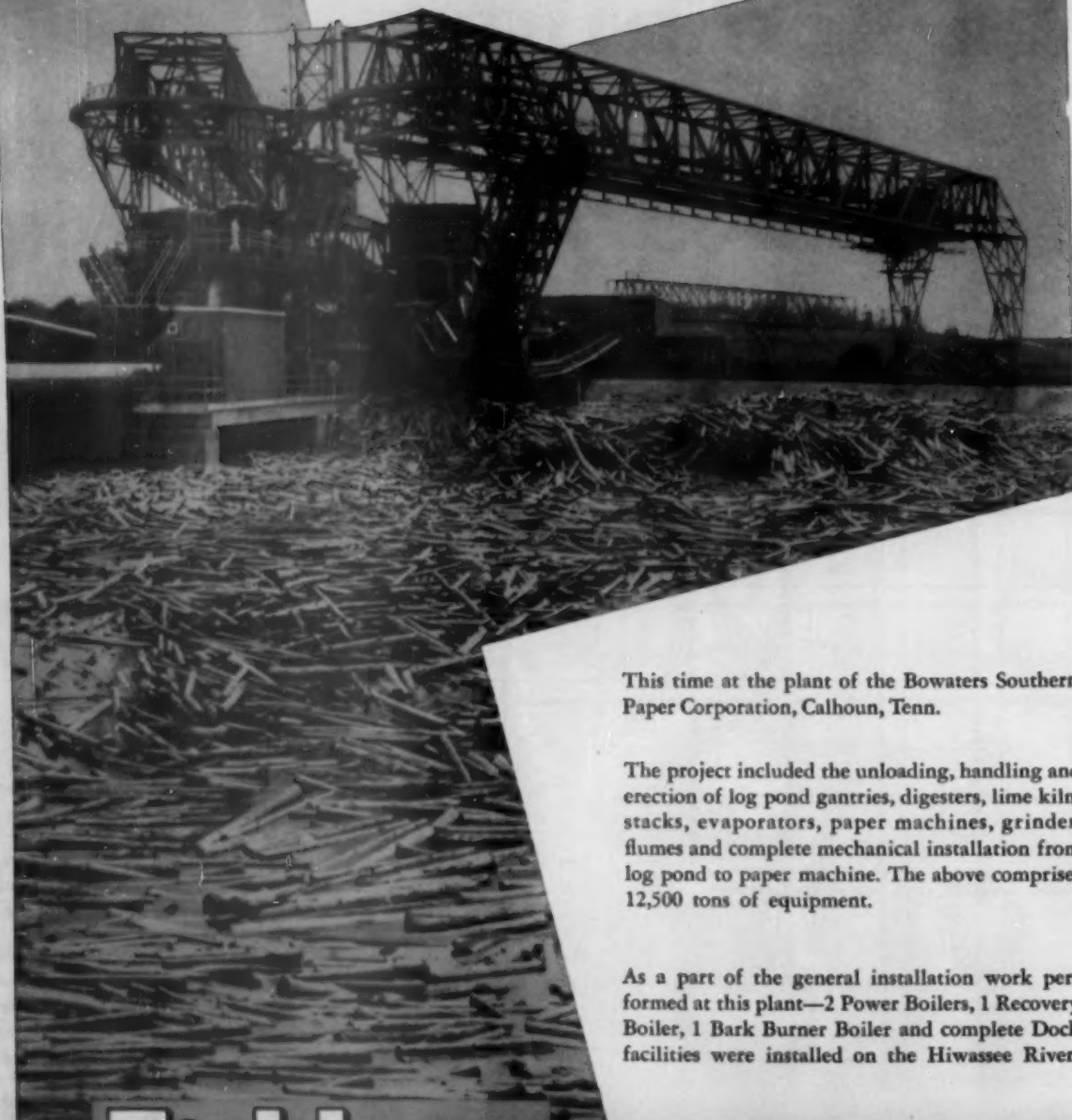


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This time at the plant of the Bowaters Southern Paper Corporation, Calhoun, Tenn.

The project included the unloading, handling and erection of log pond gantries, digesters, lime kiln, stacks, evaporators, paper machines, grinder, flumes and complete mechanical installation from log pond to paper machine. The above comprises 12,500 tons of equipment.

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3291

PULP & PAPER—1955 Review Number

21

Supertest 712

most advanced, fully automatic moisture control, with traversing, automatically lifting capacitor, with TWO recording instruments

a) along the sheet
(left graph)

b) one-way across the sheet
(bottom graph)

(Front side to back side, straight lines, non-recording return of capacitor to front side. Recording length on chart paper for one full width, traversing changeable up to 61" by simple gear shift)



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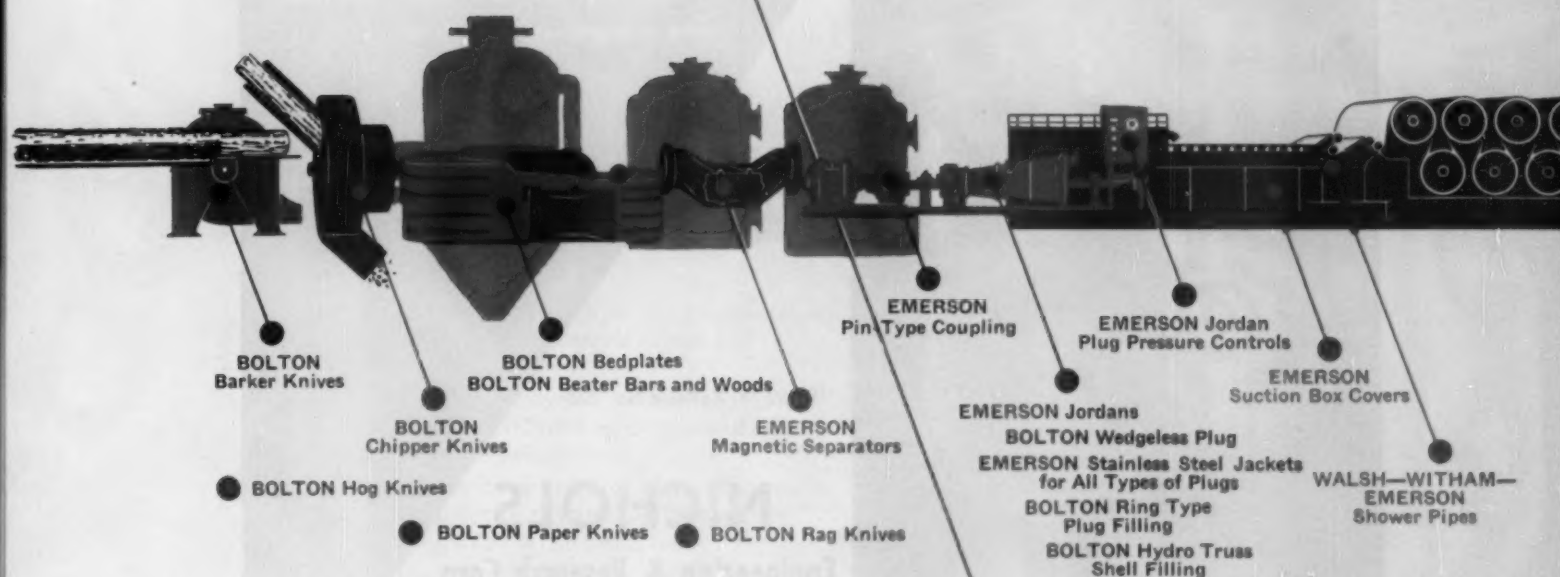
Manufacturer of HYGROTESTER: Paul Lippke, P. O. Box 29, Neuwied-Rhein, Western Germany

How • BOLTON Quality serves the Paper Industry

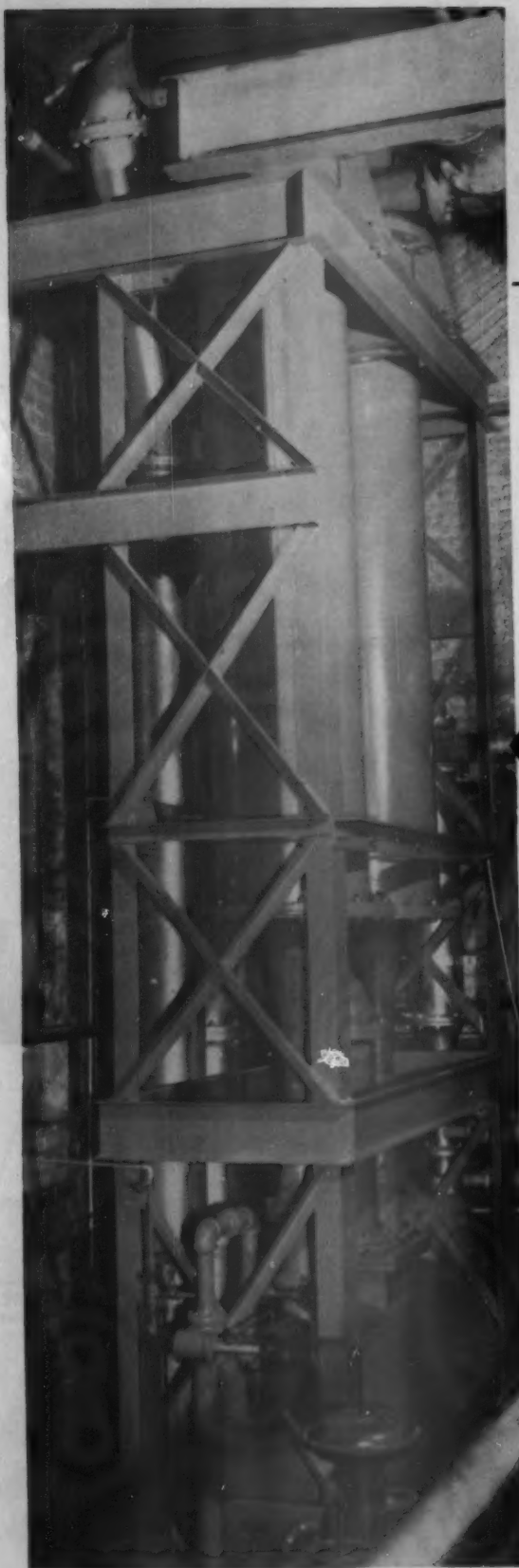
Bolton quality is old, yet forever new — old because, since 1905, it has been synonymous with the best in materials, manufacturing processes and service — new because **Bolton quality** keeps always a step in advance of the industry's ever-changing requirements and methods. He who buys Bolton, buys best.

The Bolton representative in your area is prepared to tell you about Bolton's services. They include engineering advice based on years of experience in the paper industry, complete stocks on hand to supply needed items quickly. Our plant is prepared to design and produce products to fit your special requirements.

The key spots where **Bolton quality** serves the paper mill are shown below.



John W. BOLTON • & Sons, Inc.
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VORVAC
Trade Mark
Separator

**Simultaneous removal
of AIR and DIRT
from Paper Making
Stocks**

No steam required
Minimum fibre losses
Stainless Steel Construction
1125 GPM capacity per unit
Compact layout

The New Nichols Freeman VORVAC assures greater machine speeds and increased production. Showers and foam killers are eliminated. Call in a Nichols representative for information on how a VORVAC can help solve your production problems.

Write for Bulletin No. 228

NICHOLS
Engineering & Research Corp.
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At left: VORVAC installation on newsprint machine, Consolidated Paper Co., Laurentide Division, Grand Mare P. Q., Canada



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VERSATILE—ECONOMICAL

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Nalco 918 effectively combats calcium and magnesium hardness... prevents scale formation as well as corrosion, at surprisingly low dosage.

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Nalco 818 and 918 make ideal dispersing agents for clay slurry... require no special attention, no critical control of dosage.

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Nalco 918 provides both dispersion and detergent action... quickly loosens ink from fibres... keeps it suspended for easy disposal.

NALCO research in Polyphosphates has brought better control of cost and quality to many a mill.

Listed above, of course, are merely the big and broad applications of Nalco Polyphosphates.

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EDGAR SPRAY SATIN is a good example . . . This new, pre-dispersed, spray-dried coating clay has gained immediate and wide acceptance as the leading coating clay of its type, not alone because of its excellent basic properties, but also because **SPRAY SATIN** is setting new standards of uniformity. **SPRAY SATIN** is the logical development in fine fraction coating clays due to the growing industry demand over the years for pre-dispersed H. T. . . the pioneer spray-dried coating clay.

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the **EDGAR Paper Clay** most suited to your particular requirements, there have just been published the full specifications and basic properties of all **EDGAR Coating and Filler Clays** . . . a copy is yours without obligation . . . please use the coupon below.



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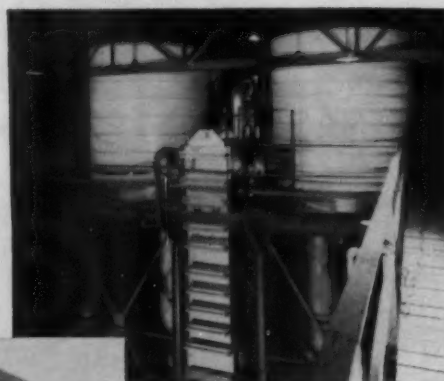
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to make
the best pulp!



Conkey Channel Switching Evaporator (Rosenblad Patents) operating on sulphite pulp mill waste liquors.

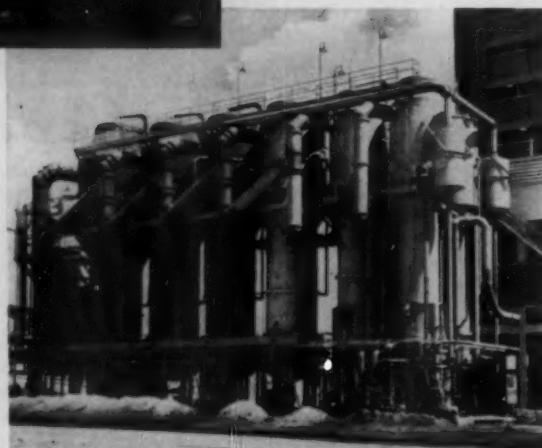


11 ft. 7 in. by 51 ft. 10½ in. digester built by CB&I for the Mead Corporation, Chillicothe, Ohio.

● The best of anything doesn't just happen. When it's the best of pulp, it takes work, planning—and the finest in equipment.

CB&I digesters are built to "take it" for constant cooking operation. Conkey evaporators provide operators with the type of equipment that helps produce the best product . . . to help make profits.

CB&I plants are completely equipped to meet your most exacting specifications. For further information on Conkey equipment and other CB&I structures, write our nearest office.



Conkey Sextuple Effect Evaporator, code constructed throughout, operating on sulphate black liquor.

CHAS. BRIDGE & IRON COMPANY

BRIDGE PLANT, BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

CONKEY
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Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
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Buckman
teamwork

gives experienced help on

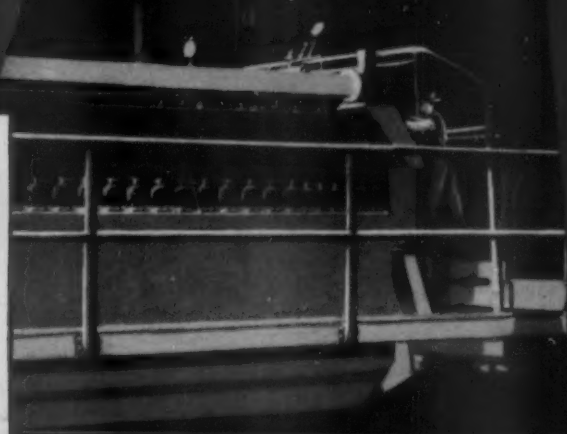
SLIME CONTROL

at YOUR mill



Development of new products
through research
IN THE LABORATORY

Evolving better technics
through on-the-spot work
IN THE MILL



**USE.. BSM-II or
BUTROL**

*as part of Good
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BUCKMAN LABORATORIES, INC.

Manufacturing Chemists & Memphis 9, Tennessee & Representatives in Most Countries

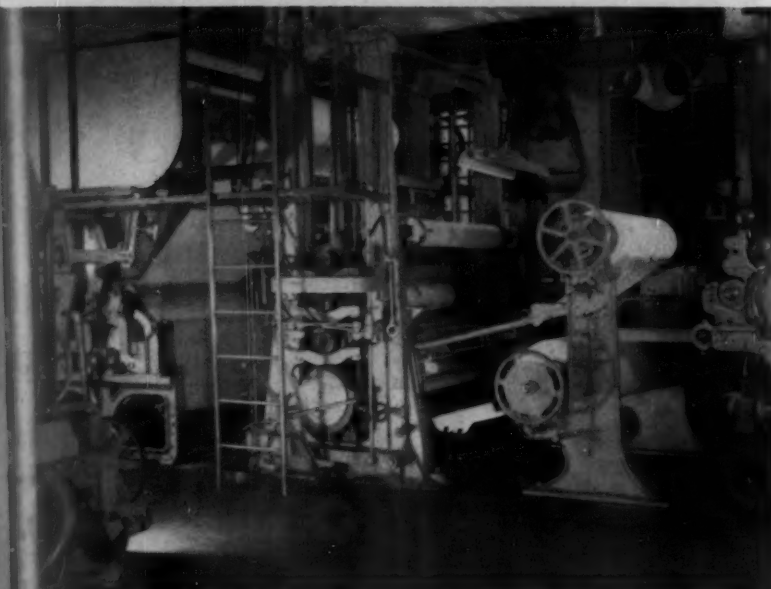


MICROORGANISM CONTROL SPECIALISTS

Cut Weight Variation as much as 40%



"Packaged"
Control Cabinet
above includes Basis
Weight Controller (top)
and Stock Gate (or Valve)
Position Recorder (below).



...with continuous, stepless automatic Foxboro Control of Basis Weight

Here's outstanding assurance of uniformity that's possible only when basis weight is put under continuous, automatic Foxboro control. Users report up to 40% reductions in basis weight variations!

Only this system takes its continuous machine-direction measurement across a wide averaging strip (14"). The special measuring circuit is self-compensating for deterioration of the radioactive material, and for changes in atmospheric pressure and temperature. Moreover, the operator merely turns a knob to preset the desired weight value.

Send today for new literature: Bulletin PD-108 describes this unique Basis Weight Control System; Bulletin PD-105-2 describes the measurement of entirely independent *across-the-sheet* weight variations with the Sheet Weight Profiler.

THE FOXBORO COMPANY, 997 NEPONSET AVENUE, FOXBORO, MASSACHUSETTS, U. S. A.

FOXBORO

REG. U. S. PAT. OFF.

Beta-Ray
Basis Weight Control

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND



TORREL BORLING

SPEED SAND SLINGER in the foundry at Beloit Iron Works. / For further details, please turn the page.



SPEED SAND SLINGER

The photograph on the preceding page shows the main foundry bay at Beloit Iron Works, Beloit, Wisconsin. Hovering like a giant arm is the boom of the automatic sand slinger from which an almost invisible stream of sand is sprayed with the impact of rifle fire. By this means, each flask is evenly rammed, insuring a casting that is a true reproduction of the pattern. Careful technological control of sand characteristics and metal analysis is an important production factor. Result: castings of the highest obtainable quality.

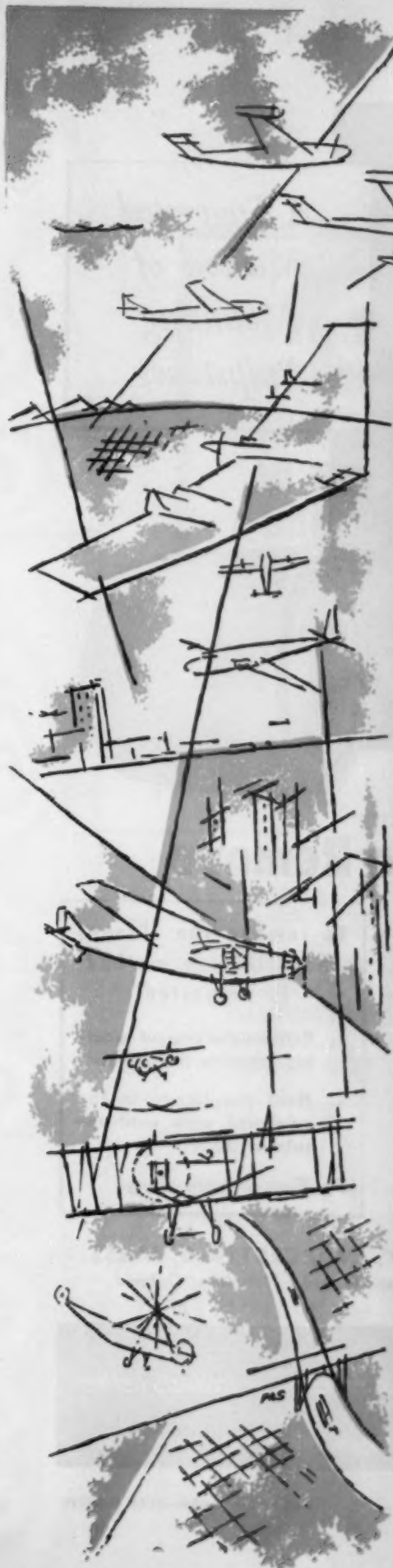
your partner in papermaking

BELOIT

PAPER MACHINERY



WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE!



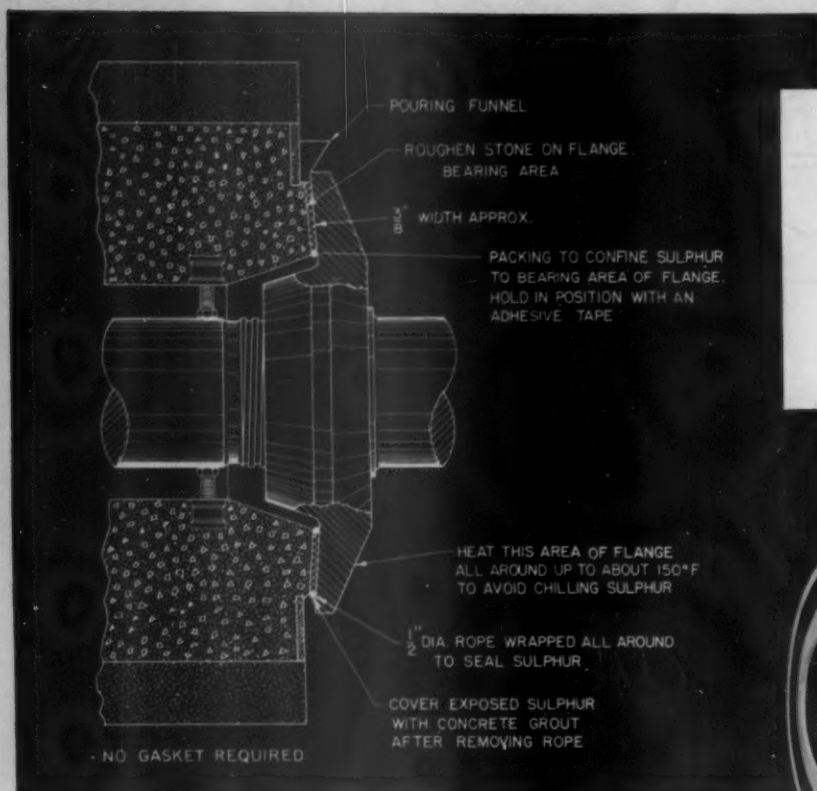
S IS FOR SUPERSONIC

In every field of scientific and technological development sulphur, the element S, continues to be indispensable.

Having contributed importantly to the entire field of aviation from its earliest days, sulphur in this age of supersonic flight helps make possible the refining of increasingly higher octane gasolines and jet fuels and the production of heat-resistant metals, rubber, batteries, lubricating oil and other essentials.

As new uses of sulphur have developed, the methods of mining the mineral have also advanced. Freeport—a pioneer in the industry—devised ways to mine inaccessible marshland deposits, introduced the use of salt water in the Frasch process and developed other significant new techniques, many of them applicable to offshore mining. With new deposits harder to find and more costly to mine than before, these advances will help to assure a plentiful supply of sulphur to meet the ever-growing needs of our economy.

FREEPORT SULPHUR COMPANY



A Suggested Method of Mounting Pulpstones



Easy to Mount... ***and even more important ... Easy to Remove***

THE method of mounting a pulpstone shown in the drawing has proved so successful wherever it has been tried that we are illustrating it here so that you may use it if it appeals to you.

While a bevel flange is illustrated this method can be used with any type of flange

Norton Pulpstone Engineering Service can be of help to you in many ways, including the specifying of the right stone to produce just the type of pulp which you require.

To remove the flanges the following method is suggested:

1. Remove the cement grouting covering the sulphur
2. Heat the flange in the sulphured area until the sulphur melts
3. Then unscrew flange

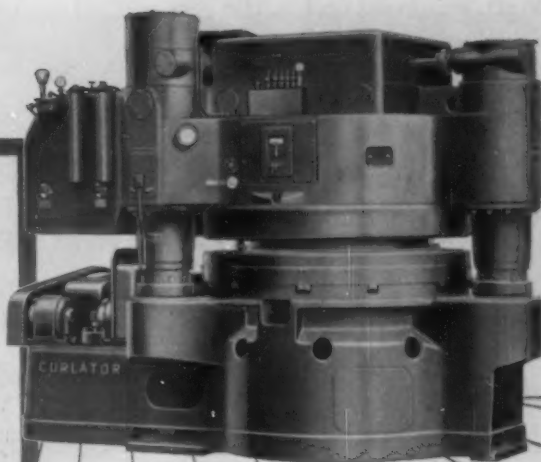


NORTON COMPANY, WORCESTER 6, MASS.
Norton Company of Canada, Ltd., Hamilton, Ontario

Making better products to make other products better

Abrasives - Grinding Wheels - Grinding and Lapping Machines - Refractories - Porous Mediums - Non-slip Floors - Norbide Products

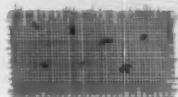
Only
CURLATOR
Will Give
YOUR PULP
All These
QUALITIES



**MORE
UNIFORM
PULP**



**INCREASES
TEAR**



**TURNS FINE
SCREEN
REJECTS INTO
QUALITY PULP**



**INCREASES
CLEANLINESS,
ELIMINATES
SHIVES...
REDUCES DIRT**

**CURLATORS ARE IN PROFITABLE
OPERATION ON SULPHITE PAPERS...
KRAFT PAPERS...TISSUE PRODUCTS**

Let us show how Curlators can profitably work for
your mill. No obligation, of course.

WRITE: We gladly offer our
engineering experience and know-how
to help solve your pulp problems.
Bulletin available.

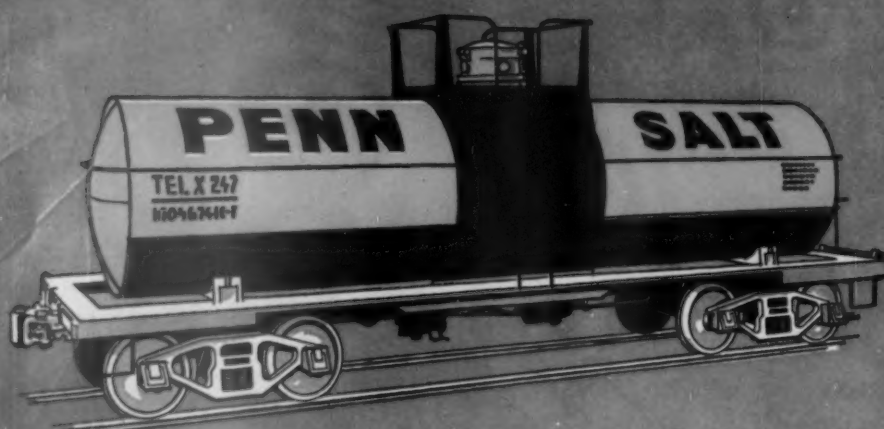
CURLATOR⁺

Corporation

EAST ROCHESTER, NEW YORK

NOW the BIG 4

Pennsalt Basic Chemicals for Refined Pulp



1 Chlorine

2 Caustic Soda

LONG a supplier of Chlorine, Caustic Soda and Sodium Chlorate to the pulp and paper industry, PENNSALT now offers ANHYDROUS AMMONIA.

Because of the current attention and interest in the ammonia-base pulping process, PENNSALT is constructing facilities at its Portland, Oregon plant to produce anhydrous ammonia. This ammonia process, although not a new development for the manufacturing of sulphite pulp, has many advantages: ease of waste disposal, increased production through reduction

3 Sodium Chlorate

4 ANHYDROUS AMMONIA

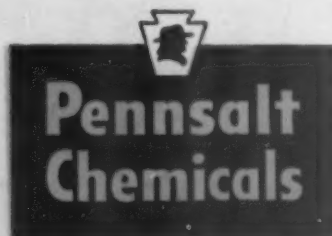
of cooking time and greater utilization of all woods. These advantages tend to reduce costs.

PENNSALT sodium chlorate produces chlorine dioxide which helps bleach wood pulps whiter and brighter with less deterioration of strength.

In addition to supplying chemicals of uniform quality, PENNSALT offers the assistance of its Technical Service Department.

Strategically located plants at Tacoma and Portland offer fast delivery and service.

Please write or telephone for detailed information on PENNSALT'S Big 4.



OFFICES AND TELEPHONES

Tacoma, Wash., Market 9101

Portland, Ore., ATwater 7655

Los Angeles, Calif., Jefferson 6244

Philadelphia, Pa., LOcust 4-4700

Berkeley, Calif., ASHberry 3-2537

PENNSYLVANIA SALT MANUFACTURING COMPANY OF WASHINGTON

Tacoma 1, Washington

Unaffected by all chemicals normally found in industry

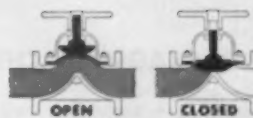
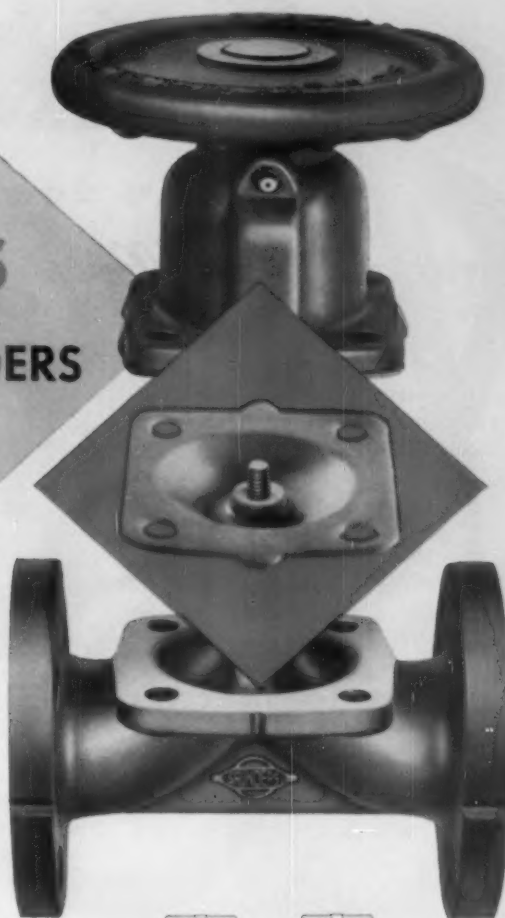
Teflon Diaphragms for GRINNELL-SAUNDERS DIAPHRAGM VALVES

Having valve trouble? Are your chemical services so tough that valves disintegrate? Grinnell-Saunders Diaphragm Valves with TEFLON* diaphragms may solve your problems.

Grinnell TEFLON diaphragms are made by a new and unique process which produces a better product of greater density, toughness and flex life. TEFLON offers a high degree of chemical inertness to all chemicals normally found in industry.

Grinnell-Saunders Diaphragm Valves are available with bodies of iron, bronze, stainless steel, cast steel, aluminum, Monel, Saran, Durimet; and with body linings of glass, lead, soft or hard rubber, neoprene, Saran. Diaphragm life depends on temperature, pressure, and frequency of operation. Your inquiries, which should be accompanied by complete service data, will receive prompt attention.

*Registered Trade-Mark, E. I. du Pont de Nemours & Company, for its tetrafluoroethylene resin.



- Diaphragm lifts full height for streamlined flow in either direction
- Resilient diaphragm assures positive, leak-tight closure even with grit or scale in the line
- Diaphragm absolutely isolates working parts from fluid . . . sticking, clogging, contamination, corrosion eliminated
- Body, lining, and diaphragm materials to suit service
- Simple maintenance. Diaphragm can be replaced easily without removing valve from line. No packing glands to demand attention. No metal-to-metal seats to become damaged or wire-drawn

GRINNELL
WHENEVER PIPING IS INVOLVED

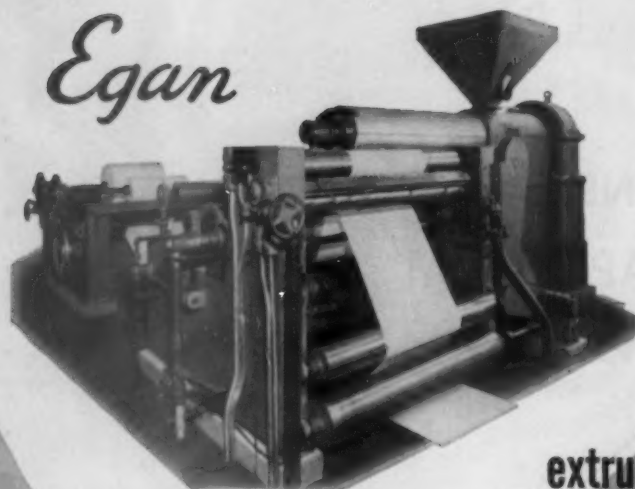


Grinnell Company, Inc., Providence, Rhode Island

Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
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Egan



**polyethylene
extruder-laminator**

(Above pictured installation at the Milford, N. J. plant of
RIEDEL PAPER CORPORATION)

COMPLETE PACKAGED MACHINE

Combining in one unit, in engineered balance,
two famous units—The Egan Extruder
and the Egan Laminator. Planned for your
current—or expanding—production, available
in varying sizes—from 24" Pilot Plant Size
to 96", 1000 feet per minute continuous
operation. Machines are capable of coating
on paper and paperboard, cellophane,
foil, glassine and cloth.



Egan machines now in operation.

Egan machines under construction.
Approximately 75% of all polyethylene
laminating machines now in
operation anywhere in the world are
Egan Equipment.



FRANK W. EGAN & COMPANY, Somerville, New Jersey

Designers and Builders of Machinery for the Paper Converting and Plastics Industries

Cable Address: **EGANCO—SOMERVILLE (N.J.)**

Representatives: WEST COAST—John V. Roslund, 244 Pacific Bldg., Portland, Ore.
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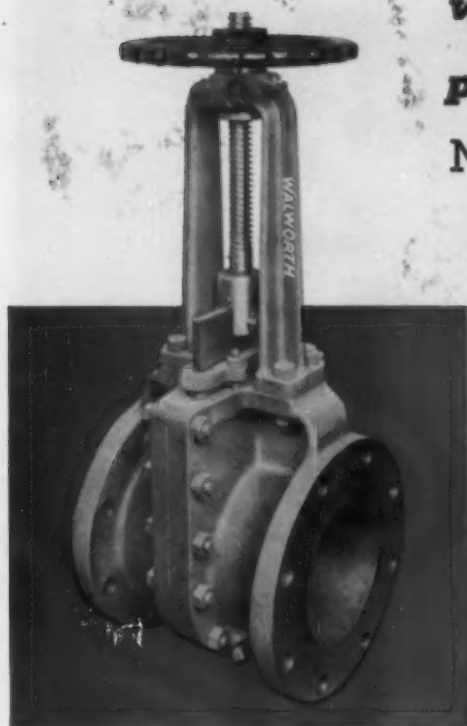
Licenses: GREAT BRITAIN—Bone Bros. Ltd., Wembley, Middlesex. FRANCE—Adard-Picard, Remy & Co.,
36 Rue d'Enghien Xs, Paris. ITALY—Emanuel & Ing. Leo Compagnoni, Via Borromeo 1 B/7, Milano.
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ASSURE *clogproof valve operation* *on stock lines*

with **WALWORTH**

pulp stock valve

No. 757F sizes 4" to 16" inclusive

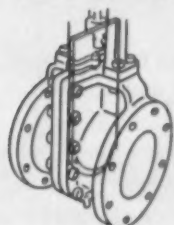


Clogproof operation makes this Walworth Gate Valve particularly suitable wherever pipelines transport pulp stock or other suspensions carrying solids or fibrous matter. There are no bonnet recesses or body obstructions to accumulate matter... circular ports permit full flow... semi-circular gate closes to a tight leakproof shutoff.

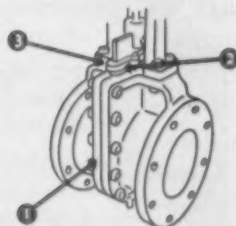
Suitable for a wide range of fluids and operating conditions, this unique valve design is available in All Bronze, Iron Body with Bronze Trim, Iron Body with Stainless Steel Trim, and All Stainless Steel construction. Handwheel, sliding-stem-and-lever, motor, and cylinder operation are available.

The complete Walworth line now includes valves and fittings for "across-the-board" use in pulp and paper mills. Gate, globe, angle, check and lubricated plug valves, as well as pipe fittings, in all conventional sizes and types. For additional technical data on the No. 757F — or any Walworth product — see your nearby Walworth Distributor or write:

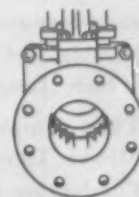
Check these features:



Semi-circular Shearing Gate... Sharpened, beveled edge of the gate shears through matter without touching inlet or outlet halves of the body. At point of closure a tight, leakproof shutoff occurs as the heel of the gate shearing edge wedges with a lug in the inlet half of the body. Ample gate length permits re-sharpening.



Bonnetless Design... 1) Two-piece body is bolted together and gasketed on a vertical centerline. 2) Stuffing box is an integral part of the body. 3) Packing and one-piece gland completely encompass gate.



Body Shearing Notches... Lower portion of the seat of the outlet half of the body is notched to better distribute the fibers of the pulp stock. This makes it easier for the gate to cut through fibrous material.

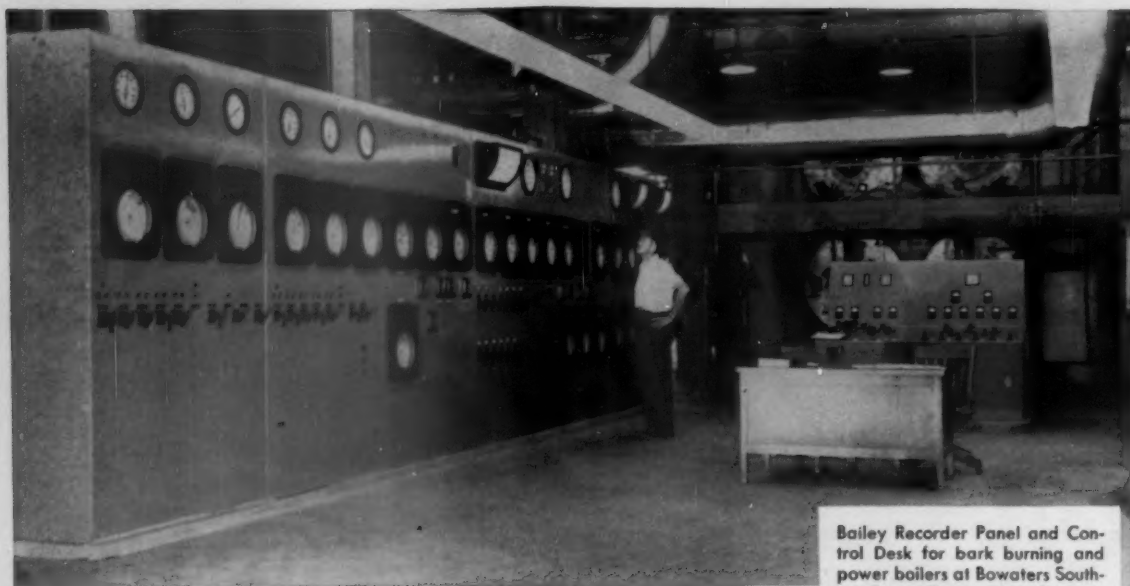
WALWORTH

Manufacturers since 1843

valves... pipe fittings... pipe wrenches

60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



Bailey Recorder Panel and Control Desk for bark burning and power boilers at Bowaters Southern Paper Corporation, Calhoun, Tennessee.

Bailey at Bowaters

Bailey Meters and Controls help Bowaters Southern Paper Corp. to secure optimum performance from Power, Bark Burning, and Recovery Units.

■ Bowaters have insured a full return from their investment in steam generating, bark burning, and recovery equipment by the use of Bailey Instruments and Automatic Controls.

This equipment includes Distribution Meters, Three-element Feed Water Control, Combustion Control, Feed Pump Control, Safety Interlocks, Pressure-reducing and Desuperheating Controls. It helps operators to deliver uninterrupted service with top fuel economy and full operating safety.

When you call Bailey in on your metering

and control problems you get the following advantages:

1. Equipment recommendations from a complete line of well-engineered and carefully tested products.
2. Seasoned engineering experience based on thousands of successful installations.
3. A Bailey District Office or Resident Engineer in or close to your industrial community.

Ask the Bailey Engineer in your community to arrange a visit to a nearby Bailey Installation. We're glad to stand on our record. A-126-1



BAILEY METER COMPANY

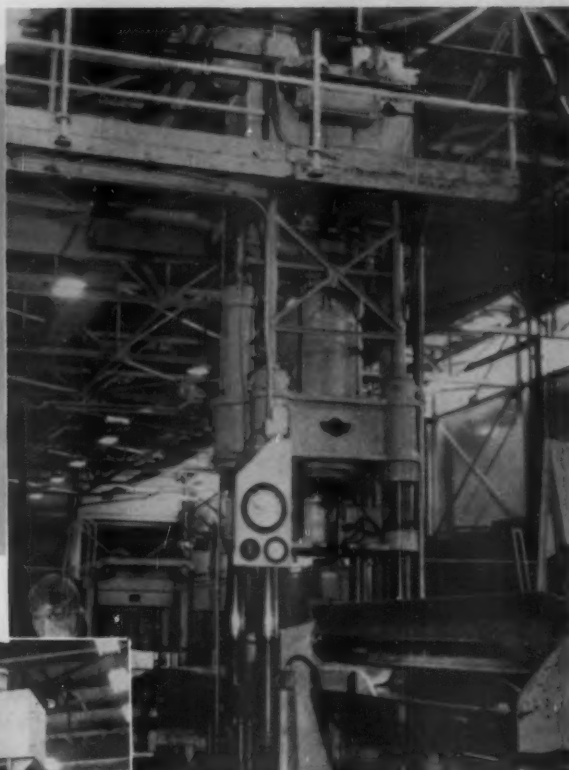
1037 IVANHOE ROAD • CLEVELAND 10, OHIO

INSTRUMENTS
AND CONTROLS

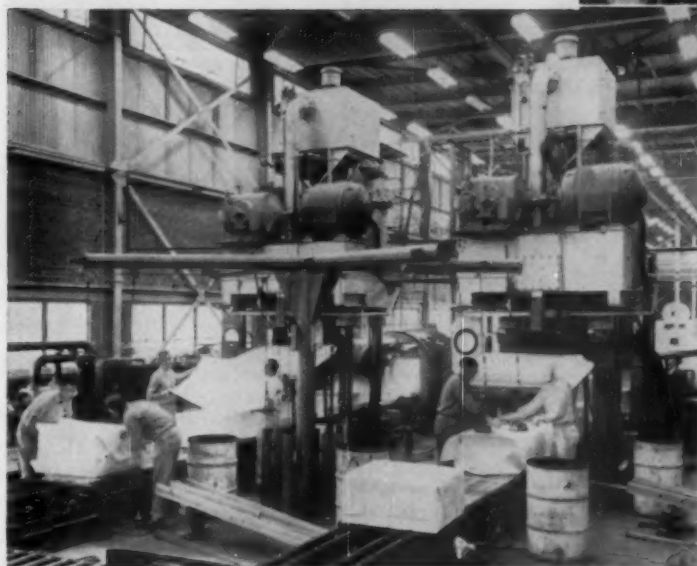
For Power And Process

WASHINGTON HYDRAULIC PULP BALING PRESSES

- ✓ **fast action**
- ✓ **high production**
- ✓ **completely automatic cycle control**
- ✓ **for every size operation**



Above, a 600-ton Washington pulp baling press at the plant of the Bowaters Southern Paper Corp. in Calhoun, Tennessee.



Left, two 1,000-ton Washington pulp baling presses in the Jesup, Georgia plant of Rayonier, Inc.

Brief specifications of

WASHINGTON HYDRAULIC PULP BALING PRESSES

CAPACITY IN TONS	600	815	1,000	1,600
Effective platen-working area	37' x 43'	43' x 43'	43' x 51'	37' x 55'
Daylight opening	54"	54 1/2"	54 1/2" or 54"	54" or 60"
Operating speeds (per minute)*				
Approach and return	200"	322"	400"	400"
Intermediate press	80"	104"	131"	130"
Full tonnage press	11.5"	20.3"	21"	19"
Stroke	30"	30"	30" or 42"	38"
Ram sizes (diameter)				
Main—single acting	23"	20 1/2"	28"	38"
Side—double acting	6 1/2" x 5 1/2"	8" x 6 1/2"	11" x 9"	14 1/2" x 12 1/2"
Pump and lines (1,500 psi)	22.00	75.40	100	216
HP required	30	100	100	200
Over-all height	16' 6"	19' 3"	21' 3"	29' 3"
Shipping weight (lbs.)	45,000	62,000	64,000	130,000

Standard models of Washington pulp baling presses are available in capacities from 600-tons to 1,600-tons. All presses offer optional daylight and stroke combinations, speeds and cycles to individual requirements without altering the basic press design. Inquiries for standard or special presses and press accessories are invited. Write for recommendations and specifications on the Washington press best suited for your operation.

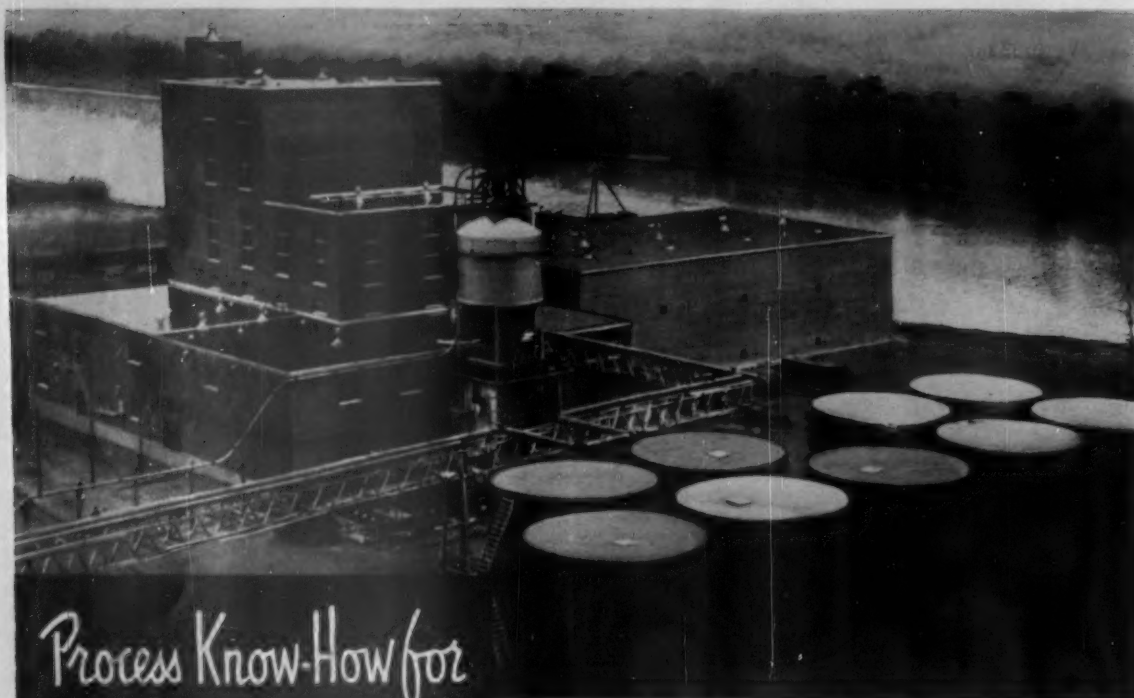
The leading manufacturer of pulp baling presses, Washington Iron Works also manufactures hydraulic hot plate presses for plywood, door and hardboard production.

1500 6th Ave. South, Seattle 4, Wash. Since 1882



ELIOTT 1292

WASHINGTON IRON WORKS



Process Know-How for **WASTE UTILIZATION**

Vulcan-designed ethanol plant utilizing waste sulfite pulp liquor

- CONVERSION OF WASTES
- RECOVERY AND REFINING OF BY-PRODUCTS
- DISPOSAL OF PROCESSED RESIDUES

Vulcan Engineering Division has designed and built systems for translating problems of wastes into opportunities for profits. Companies—particularly those engaged in wood-pulping operations—should examine their problems of wastes and stream or air contamination in the light of this experience. Vulcan installations for turning wastes into profits include those for . . .

- Production of ethanol from waste sulfite liquor
- Production of saleable by-products from semi-chemical and hardwood pulping waste liquors
- Recovery of sulfur dioxide from pulp digester gases
- Evaporation and burning of waste liquors or processed residues

Waste utilization facilities require the same comprehensive engineering as the primary plant—including special consideration of the processes from which the wastes result. Vulcan Engineering Division offers complete facilities and engineering service for the job required . . .

- Preliminary economic evaluations of applicable processes
- Process development by laboratory and pilot plant, integrated into a detailed process design
- Specification and procurement of equipment and materials
- Erection of the waste utilization facilities
- Initial operation and operator training

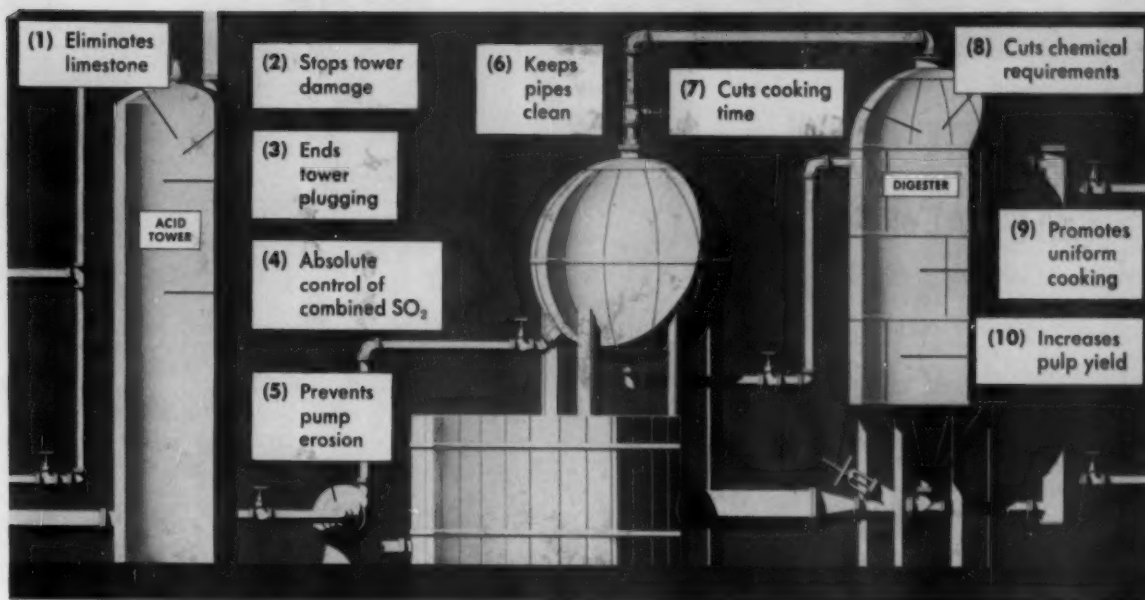
Fifty-four Years' Experience in Serving the Chemical Process Industries

VULCAN ENGINEERING DIVISION



The VULCAN COPPER & SUPPLY CO., General Offices and Plant, CINCINNATI 2, OHIO
 BOSTON CHARLOTTE, N. C. DENVER HOUSTON RICHMOND, VA. SAN FRANCISCO WILMINGTON, DEL.
 VICKERS-VULCAN PROCESS ENGINEERING CO., LTD., MONTREAL, CANADA

DIVISIONS OF THE VULCAN COPPER & SUPPLY CO.:
 VULCAN ENGINEERING DIVISION • VULCAN MANUFACTURING DIVISION • VULCAN CONSTRUCTION DIVISION



Here's how Spencer Anhydrous Ammonia saves time, cuts costs and increases yields. Read how this quicker, cleaner, better method of pulping can benefit your mill:

10 Ways Ammonium Bisulphite Pulping Can Help Increase Your Pulp Mill Profits:

It is generally agreed that ammonium bisulphite pulping offers many advantages. Ten of these advantages are shown above. Now, let's look at what some of these advantages can mean to you:

In the first place, Spencer Anhydrous Ammonia ends the need for stone handling. This reduces labor costs and, at the same time, stops damage formerly caused by dumping stone into the acid tower.

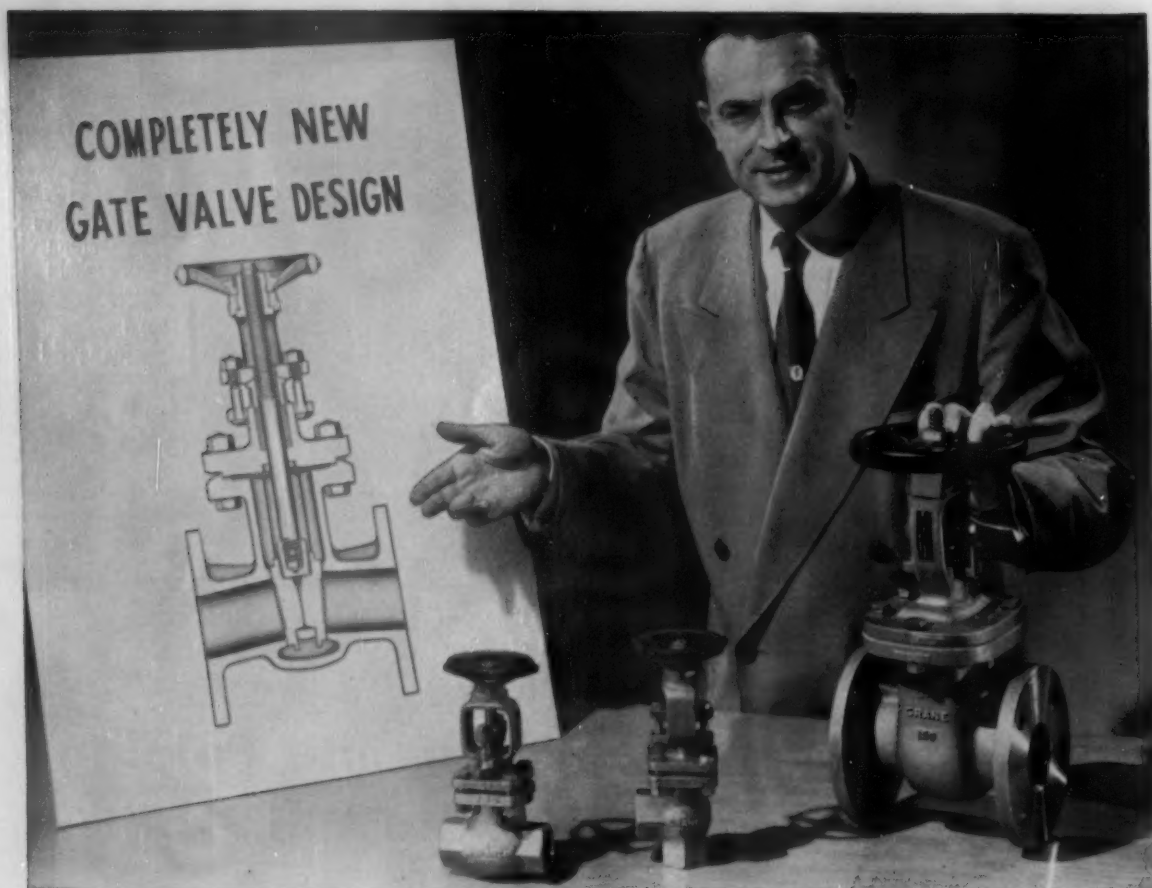
Pipes are cleaned, not clogged, by ammonium bisulphite acid. With ammonia base, absolute control of combined SO_2 is accomplished by the mere twist of a valve.

Ammonia cooking liquor penetrates more rapidly, allowing shorter cooking cycles, lower temperatures and more uniform operation. Pulp yield per cord of wood is increased, and chemical requirements are decreased. Also, ammonium bisulphite is adaptable to the pulping of hardwoods.

Why not set up a test run, and prove in your own plant the benefits of this pulping process? Our Technical Service Staff will be glad to provide you with technical assistance. Just write: Technical Service Section, Spencer Chemical Company, Dwight Building, Kansas City 5, Missouri.



AMERICA'S GROWING NAME IN CHEMICALS



New CRANE Corrosion-resistant valves in 18-8 SMO and Craneloy 20

Gate, Globe, Angle and Check Patterns

Few valves for process industries have ever received the quality treatment given this new Crane line—at prices you'll find O.K.

Note, for instance, the unique yet simple split-wedge disc construction in the gate valves. Those dual identical discs are free to rotate in their holder—the most effective design for resisting galling. The trunnion shape at the back of each disc assures even distribution of closing forces. You couldn't buckle them if you tried.

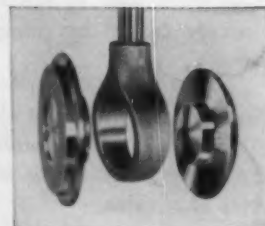
The globe and angle valves give equally outstanding control of corrosive fluids. A new type disc-stem connection, with minimum clearances, practically eliminates

vibration. By placing seating load closer to seats, it provides easier, more accurate closure.

Check valves feature compact, thoroughly proved, non-slamming design.

Throughout, these valves are built for better service in your choice of Crane 18-8 SMO Stainless Steel or Craneloy 20. Both lines come with screwed or flanged ends.

ASK FOR THIS CATALOG—Full information including service suggestions given in circular AD-2080—available from your Crane Representative or by mail. Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers everywhere.



New split-wedge disc in gate valve combines the benefits of free rotation with uniform seat load pressure.



CRANE CO.

VALVES • FITTINGS • PIPE
KITCHENS • PLUMBING • HEATING

CRANE'S FIRST CENTURY...1855-1955



perfect balance: *the eternal triangle of felt design!*

Felt designing is an eternal triangle. It is comparatively easy to design a felt to give longer life, but equally important is the retention of the desired characteristics of water removal and finish! Therefore, your Albany Felt designer is constantly weighing and adjusting these three factors to give you the perfect balance for the performance required on *each* position of *each* machine!

That's why your Albany Felt designers, working with sales and service engineers, spend so much time and effort studying machine blueprints, felt and stock samples, performance reports, and all of the many other factors that supply us with the clues that lead to better felt design!

Paper is our business, too, for behind all of this activity is our desire to provide you with a felt that will more efficiently produce better paper or board. The goal, as always: **MORE SALEABLE TONS PER DAY!**



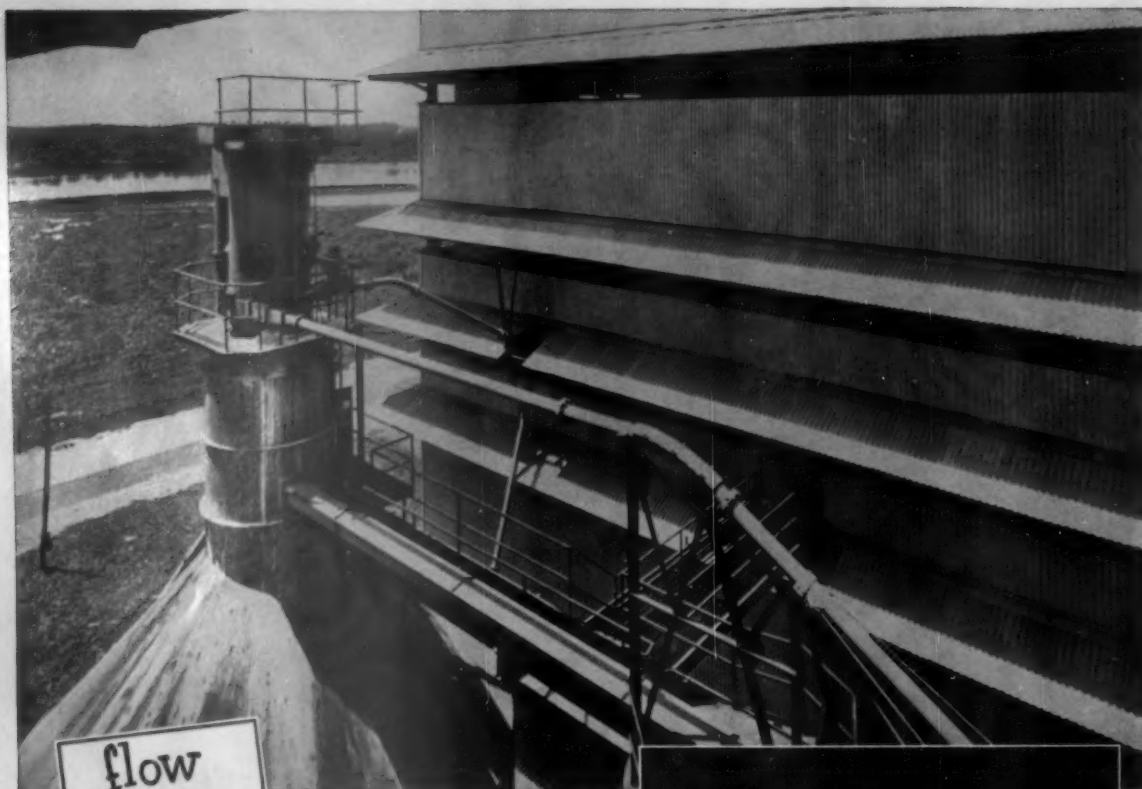
ALBANY FELT COMPANY

"World's Largest Manufacturer of Paper Machine Felts"

MAIN OFFICE AND PLANT, ALBANY 1, NEW YORK

Other plants:

Hoosick Falls, New York; North Monmouth, Maine; Cowansville, Quebec



Flow
Your
bulk
chemicals

from cars to
storage...in-plant
to process with
THE AIRVEYOR.

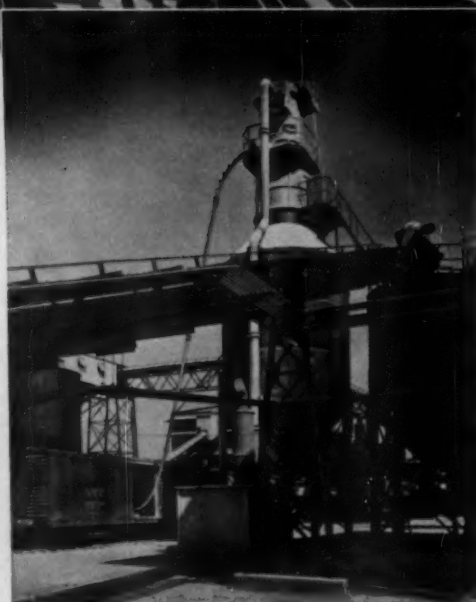
Handling your mill-supply chemicals . . . lime, soda ash, salt cake, starch and clays with the Airveyor—unloading from cars to storage or in-plant conveying—is the simplest, cleanest, and most economical method of doing the job.

Illustrated is an Airveyor installation in the south. Upper photo shows a system for unloading salt cake from cars to two storage bins at rate of 10 tons an hour. Also reclaims from storage and delivers to a service bin in the recovery building. Lower photo shows another system in the same plant unloading pebble lime at rate of 10 tons an hour, delivering to storage in the causticizing plant.

Well over 100 Airveyor systems are in service in the pulp and paper industry in the United States and Canada. This popularity is due to its inherent ability to perform, day in and day out, efficiently and with minimum attention and maintenance expense.

Fuller Company experience of over a quarter century in air-conveying places it in a top position to recommend and design a system that will give you the most economical results. A study of your operation will cost you nothing . . . may well show the way to consistently profitable operation and a smoother flow in production.

FULLER COMPANY, Catsauqua, Pa.
GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY
Chicago • San Francisco • Los Angeles • Seattle • Birmingham



Fuller

... pioneers in harnessing AIR

A-207
1967

"SAVINGS in operation and maintenance
first year were *more than* cost of four
Yarway Digester Blow Valves"



THAT was the experience of a large Florida mill after they installed YARWAY Seatless Motor Operated Blow Valves on their digesters.

Clean, fast blows eliminated production delays. Expensive liquor loss from leaking valves ended. Remote control of motor operation reduced operating costs.

Continued satisfaction has resulted in installation of additional YARWAY Digester Valves for expanded plant facilities.

Such records are not unusual and new features like the YARWAY 17/4 PH stainless steel plunger and automatic lubricator, combined with improved operating control, make YARWAY Seatless Digester Blow Valves an even better buy today.

You may choose between hydraulic-cylinder or electric motor operated valves, all remotely controlled.

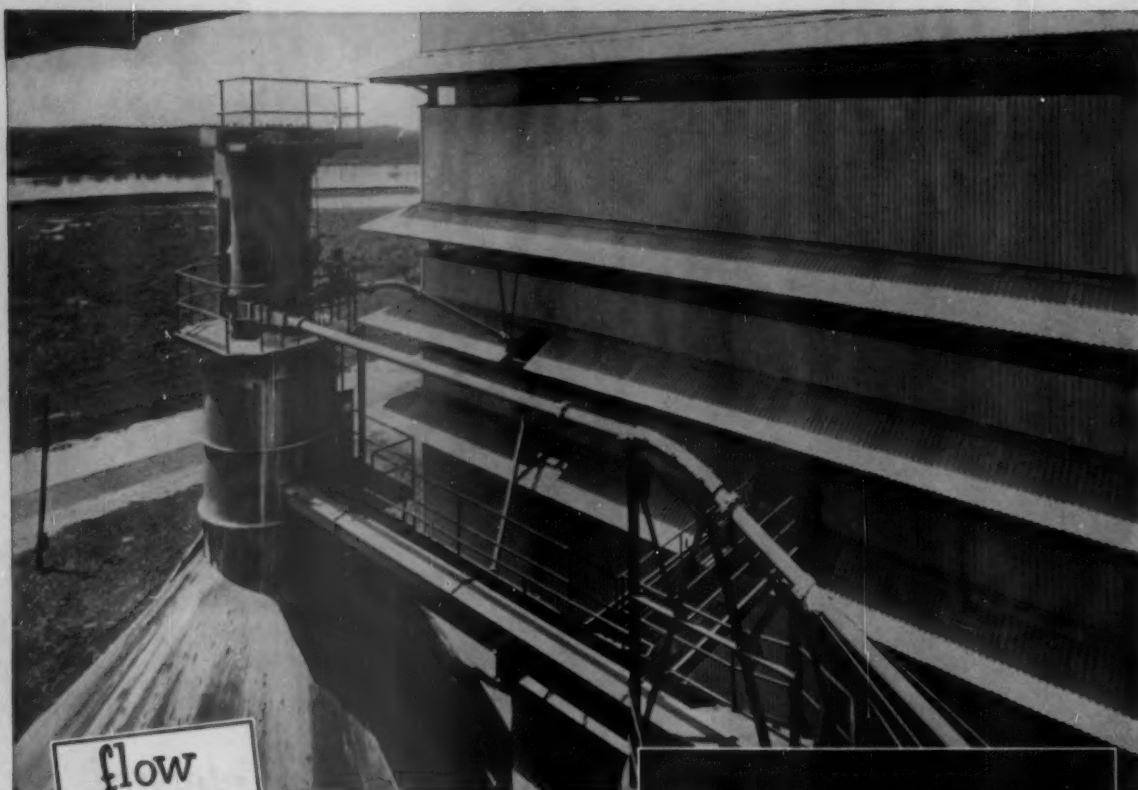
YARNALL-WARING COMPANY
103 Mermaid Avenue, Philadelphia 18, Pa.
BRANCH OFFICES IN PRINCIPAL CITIES

For the full story
on Yarway Seatless
Digester Blow Valves
write for this free Bul-
letin B-440.



YARWAY

digester blow valves



flow
your
bulk
chemicals

from cars to
storage...in-plant
to process with
AIRVEYOR

Handling your mill-supply chemicals . . . lime, soda ash, salt cake, starch and clays with the Airveyor—unloading from cars to storage or in-plant conveying—is the simplest, cleanest, and most economical method of doing the job.

Illustrated is an Airveyor installation in the south. Upper photo shows a system for unloading salt cake from cars to two storage bins at rate of 10 tons an hour. Also reclaims from storage and delivers to a service bin in the recovery building. Lower photo shows another system in the same plant unloading pebble lime at rate of 10 tons an hour, delivering to storage in the causticizing plant.

Well over 100 Airveyor systems are in service in the pulp and paper industry in the United States and Canada. This popularity is due to its inherent ability to perform, day in and day out, efficiently and with minimum attention and maintenance expense.

Fuller Company experience of over a quarter century in air-conveying places it in a top position to recommend and design a system that will give you the most economical results. A study of your operation will cost you nothing . . . may well show the way to consistently profitable operation and a smoother flow in production.

FULLER COMPANY, Catsauqua, Pa.
GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY
Chicago • San Francisco • Los Angeles • Seattle • Birmingham

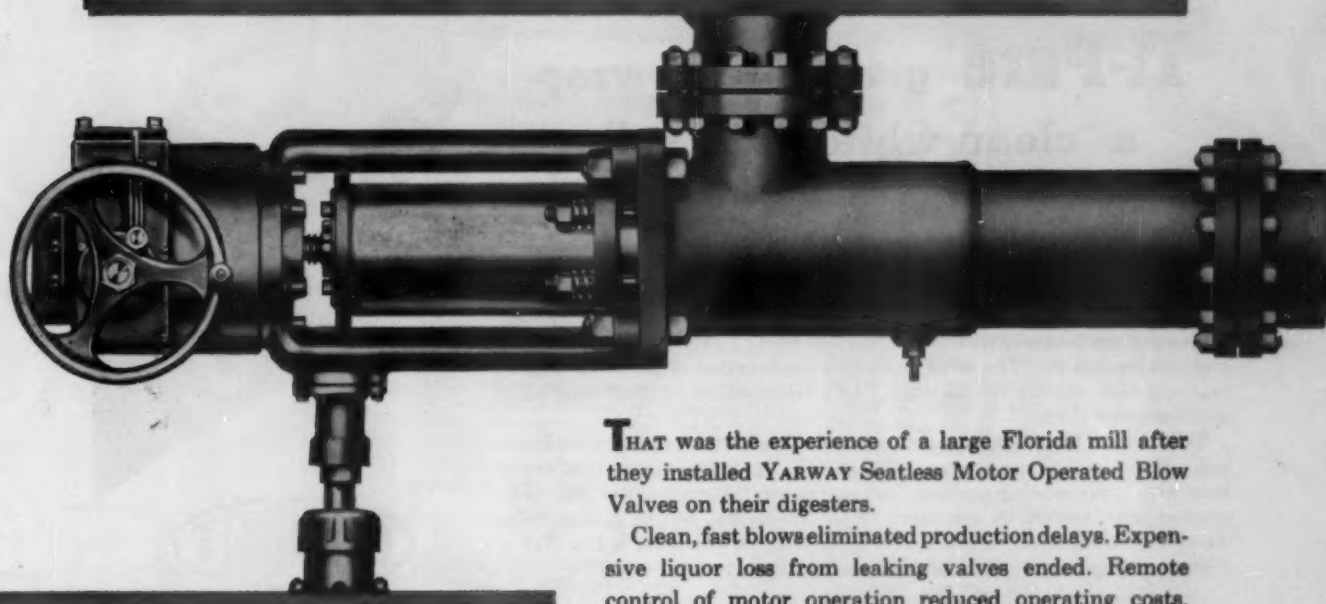


Fuller

pioneers in harnessing AIR

A-307
1567

"SAVINGS in operation and maintenance
first year were *more than* cost of four
Yarway Digester Blow Valves"



THAT was the experience of a large Florida mill after they installed YARWAY Seatless Motor Operated Blow Valves on their digesters.

Clean, fast blows eliminated production delays. Expensive liquor loss from leaking valves ended. Remote control of motor operation reduced operating costs.

Continued satisfaction has resulted in installation of additional YARWAY Digester Valves for expanded plant facilities.

Such records are not unusual and new features like the YARWAY 17/4 PH stainless steel plunger and automatic lubricator, combined with improved operating control, make YARWAY Seatless Digester Blow Valves an even better buy today.

You may choose between hydraulic-cylinder or electric motor operated valves, all remotely controlled.

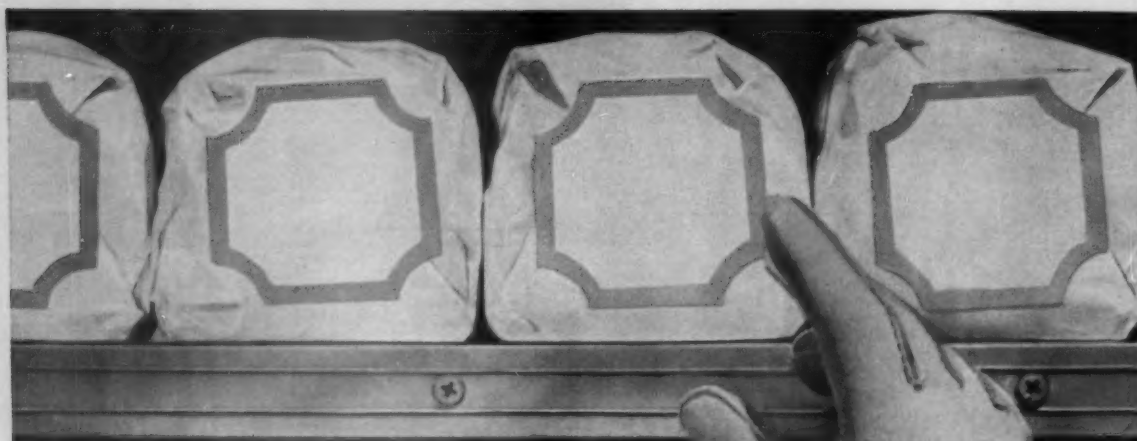
YARNALL-WARING COMPANY
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For the full story
on Yarway Seatless
Digester Blow Valves
write for this free Bul-
letin B-440.



YARWAY

digester blow valves



Ti-Pure[®] gives bread wrap a "clean white" that sells

Fresh, "clean white" for bread and other food wrap helps complete the sale—both to your customers and the ultimate consumer. And to give bread wrap, waxed board, glassine and parchment lasting, sales-winning "whiteness," there's nothing like Du Pont TI-PURE titanium dioxide pigments.

Applied to bread wrap, TI-PURE improves its printability to make your customers' trade marks distinctive, easy-to-read . . . gives extra brightness and greater opacity. The same attractive combination of premium brightness and high opacity results when TI-PURE is added to other food wrap and container stock.

Time-tested TI-PURE pigments are now offered direct to you by Du Pont, and are sold only under the name, TI-PURE. For more information, or for help with a pigmentation problem, call our nearest district office. Our technical experts, backed by a modern paper laboratory, will be glad to help. There's no obligation, of course. E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, Wilmington 98, Delaware.



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

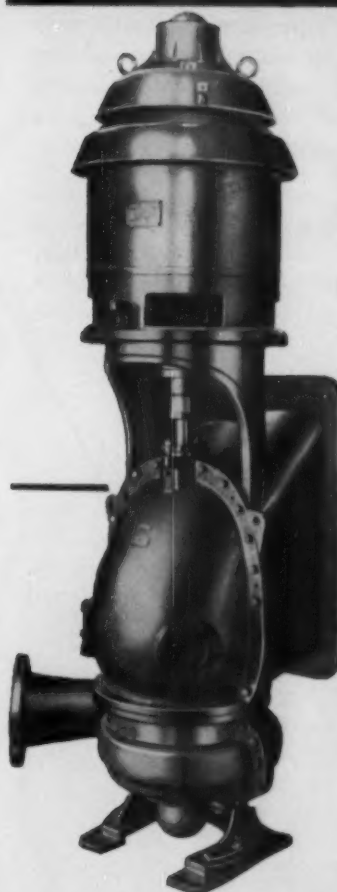
PROMPT, NATION-WIDE SERVICE THROUGH THESE DU PONT DISTRICT OFFICES* AND WAREHOUSES:

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| Atlanta, Ga. | *Houston, Texas | *Malden, Mass. | *Philadelphia, Pa. |
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THE
Bingham
PULP HOG
FOR DECKER, WASHER
OR THICKENER

A STOCK PUMP THAT CANNOT BE AIR-BOUND!



- HANDLES AIR-ENTRAINED PULP
- DISCHARGES PULP AT CONSTANT RATE
- UNINTERRUPTED FLOW INCREASES PRODUCTION
- RELIABLE PERFORMANCE UNDER ALL CONDITIONS

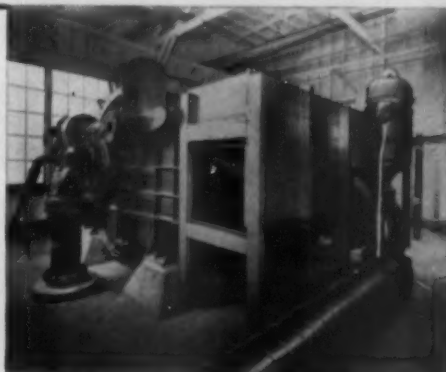
The patented Bingham Pulp Hog has been developed particularly for pumping stock containing large volumes of entrained air. This specially-designed pump takes stock from the doctor blades of Deckers, Washers, and Thickeners, and pumps it — without becoming air-bound or clogged — directly into mill system.

The Bingham Pulp Hog is characterized by a large suction opening and non-clogging im-

pellor of the top suction type. Impellers are specially designed to efficiently handle both high and low consistency stock.

Bingham Pulp Hogs have records of dependable performance in major pulp and paper mills throughout the world. For more information call your nearest Bingham office or write for Bulletin No. 26.

- Permits installation at convenient locations in mill flow line.
- Permits use of available floor space regardless of location of storage chest or other equipment.
- Operates successfully in basements or on any floor level.
- Eliminates need for dump chests.
- Substantially reduces building costs.
- Reduces operating heads, resulting in power savings.



Bingham Pulp Hog taking stock directly from Doctor Blade of Washer, Weyerhaeuser Pulp Mill, Everett, Washington.

Bingham
SINCE 1921

BINGHAM PUMP COMPANY

General Offices: 2800 N.W. Front Avenue, Portland 10, Oregon

Factories: Portland, Ore. • Vancouver, B.C., Canada



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VANCOUVER, B.C., CAN.

producers of machinery and systems for every pulp and paper making process

The most complete and diversified line of equipment for turning trees into paper products comes from the specialized engineering and manufacturing skills of the various divisions of The Black-Clawson Company.

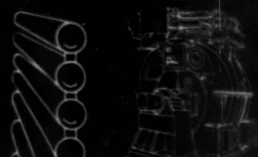
Within this world-wide organization, the pulp and paper industry finds a vast store of knowledge and experience unequalled anywhere; the most versatile group of paper mill machinery engineering specialists ever assembled . . . precision manufacturing facilities and personnel producing everything from small valves to giant paper machines.

This is Black-Clawson . . . old in years, young in ideas . . . a closely-knit, smoothly functioning team serving the entire industry through the ability to take undivided responsibility for design, production, erection and performance of all the equipment needed in a modern pulp or paper mill.

This is Black-Clawson

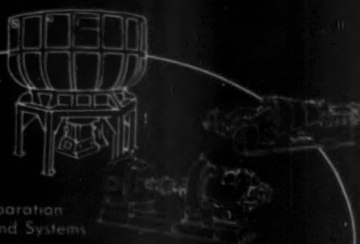


Pulp Mill and Bleaching Equipment

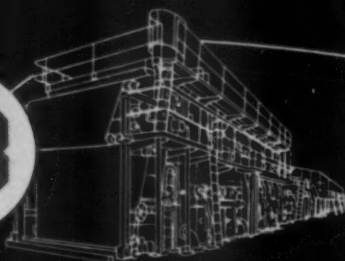


PANDIA

Stock Preparation Machinery and Systems

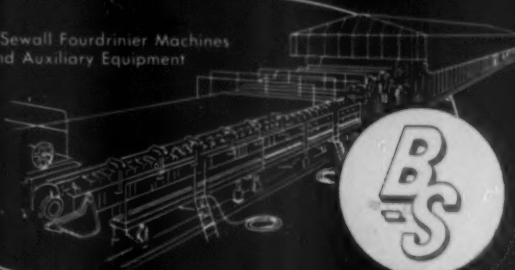


SHARTLE



Cylinder Board Machines and Auxiliary Equipment

Bagley-Sewall Fourdrinier Machines and Auxiliary Equipment

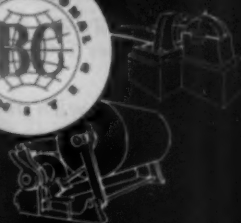


DILTS

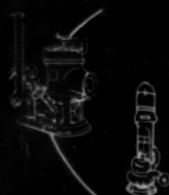
Paper and Plastic Converting Machinery



Black-Clawson International, Limited
Serving Foreign Markets



Black-Clawson (Canada) Limited
Serving Canada



THE BLACK-CLAWSON COMPANY

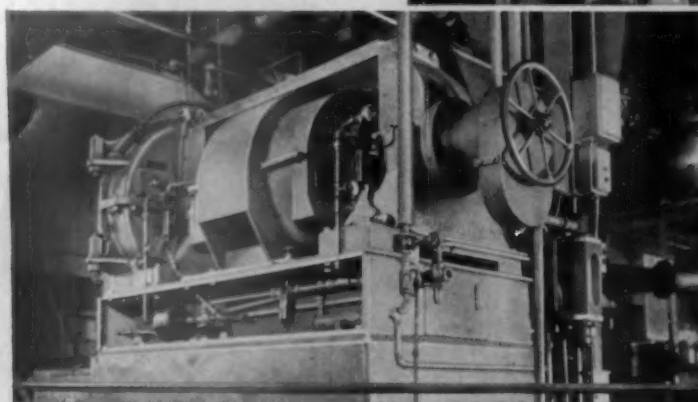
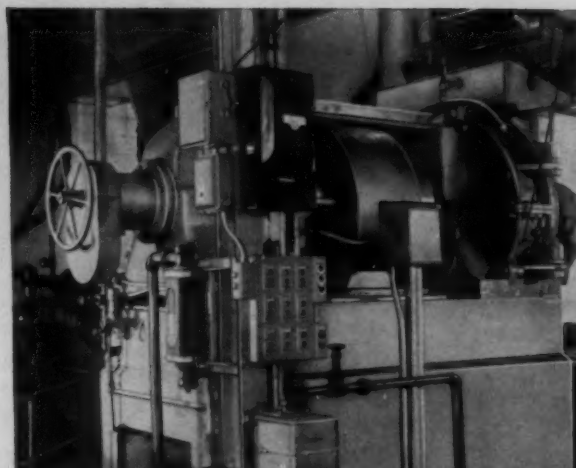
Black-Clawson Division, Hamilton, Ohio
Shartle Bros. Machine Division, Middletown, Ohio
Dilts Machine Works Division, Fulton, N. Y.
The Bagley-Sewall Corp. Division, Watertown, N. Y.
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for economical hardboard
fiber preparation

Superwood CORPORATION

chooses a

**SPROUT-WALDRON
36-2 REFINER**



The Sprout-Waldron 400 h.p. 36-2 Refiner at Superwood Corporation, Duluth, Minn. refines aspen Asplund fiber for SUPERWOOD hardboard. The refiner base cover has been removed to show the circulating oiling system. Above the refiner is the Uniflow Feeder built to Sprout-Waldron design and specifications. This feeder transforms a pulsating feed from the Asplund cyclone into a uniform refiner feed.

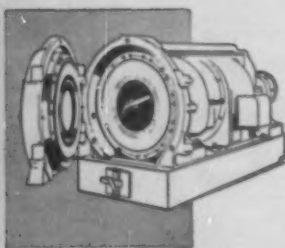
The
SPROUT-WALDRON
refiner is a
leading producer of
hardboard
fiber

*Single rotating disc design with peripheral control ring
plus rugged construction for...*

- Uniform Fiber
- High Capacity
- Flexibility of Operation
- Low Maintenance

*For more information on hardboard fiber preparation, or any other
pulp application, send for our file of technical and practical data.
Write to Sprout, Waldron & Co., Inc., 32 Logan St., Muncy, Pa.*

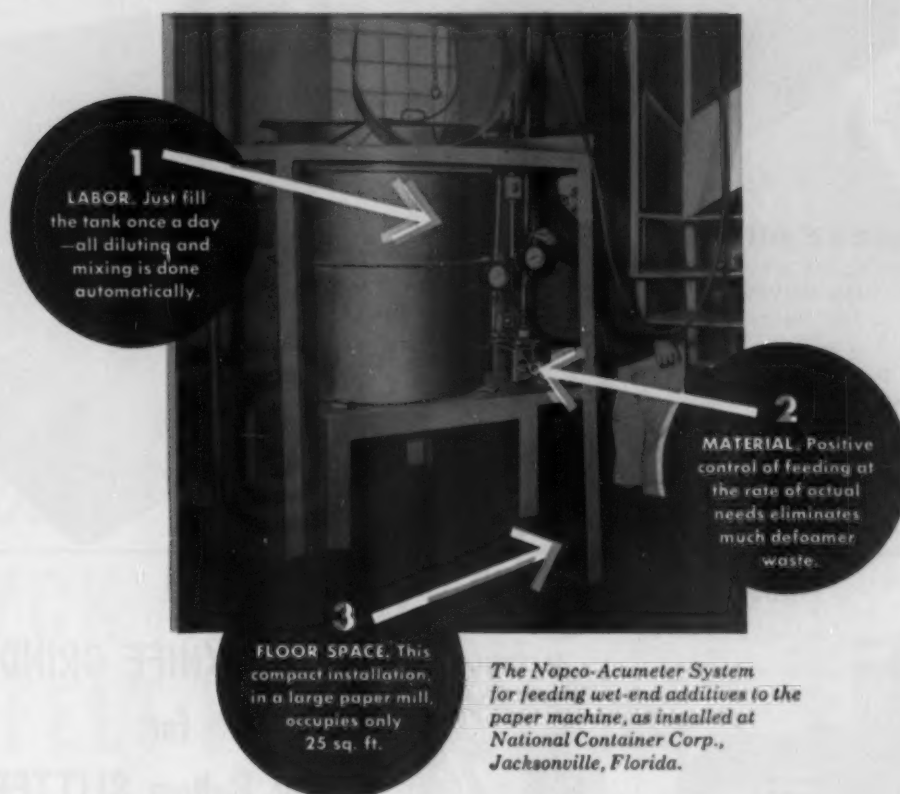
**S
W**



for your pulping problem—

SPROUT-WALDRON
PULP REFINERS

NOW! A new automatic technique for adding NOPCO paste defoamers...that makes 3 big savings:



The Nopco-Acumeter System for feeding wet-end additives to the paper machine, as installed at National Container Corp., Jacksonville, Florida.

Nopco is well known as a maker of effective defoamers, both paste and liquid. Now we have taken a big step to help you *apply* them more easily. In the Acumeter Synchronous Flow System, developed by Nopco in collaboration with Acumeter Laboratories, we offer you a highly flexible and automatic method of applying defoamers at any rate of flow you choose—which not only does this important job better—but brings you big savings in costs.

1. The "Acumeter" saves you all the labor of mixing and handling dilute solutions—this is done completely automatically.

2. It saves you large amounts of floor space, for the "Acumeter" takes far less room than the storage tanks and mixing equipment you have been using.
3. You'll save on the quantity of defoamer used, since the system's positive feeding allows for exact control at the level of actual requirements—no need for a margin of safety.

Yet with all these advantages, the cost of the system installed is much less than the cost of a well-designed storage system for handling dilute emulsions.

We offer a booklet which gives much more detail than we have room for here. Write today for your copy.
Nopco Chemical Co., 332 Water St., Harrison, N. J.



PLANTS: Harrison, N. J. • Cedartown, Ga. • Richmond, Calif. • London, Ont. Canada

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knife grinders

for GRINDING - HOG - BARKER - PAPER TRIMMER and DOCTOR BLADES

for finest finishes

MODEL



EXTRA HEAVY DUTY

MECHANICAL OR HYDRAULIC
TRANSMISSION DRIVES

speeds: 10' to 100', 30' to 150' and faster

motors: 7½ h.p. to 40 h.p.

weights: 10 tons up to 40 tons

capacity: 84" to 360" and longer

drives: Mechanical or hydraulic head carriage for flat or concave bevel grinding

other models:



— medium heavy duty — capacity 32" to 184"



— normal production — capacity 32" to 108"

Announcing the NEW

MODEL



SLITTER KNIFE GRINDER

for

Top or Bottom SLITTERS

WET GRIND



- finest finishes
- extreme accuracy
- rigid construction
- capacity 3" to 24" diameter
- semi or fully automatic
- positive and accurate fixturing

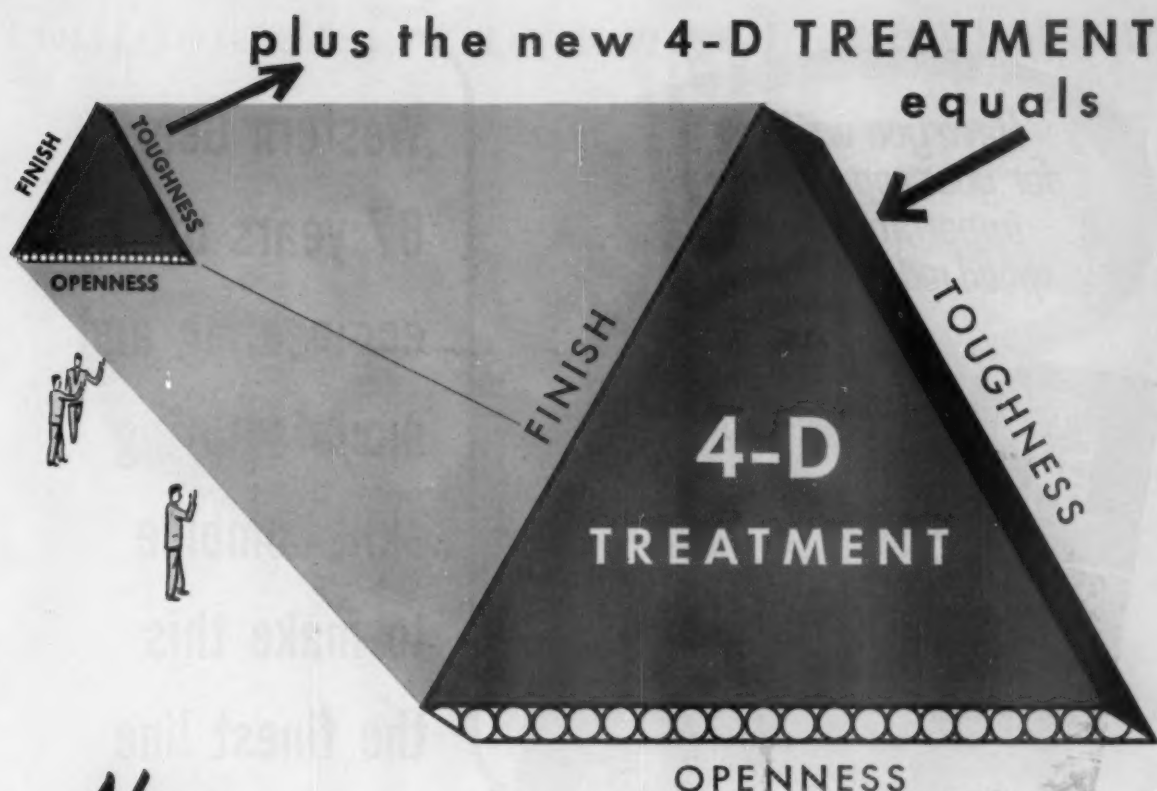
HANCHETT MANUFACTURING COMPANY

World's Largest Manufacturer of Knife Grinding and Saw Sharpening Machinery

MAIN OFFICE — Big Rapids, Michigan

WEST COAST — Portland 1, Oregon





Now— HUYCK ADDS A 4TH DIMENSION TO FELT PERFORMANCE . . .

The two triangles * you see above illustrate the 3 essential properties of a papermaker's felt — toughness . . . finish . . . and openness.

The small triangle represents the limits of felt design *WITHOUT* 4-D. The big triangle shows how 4-D extends the limits of all design "legs" of the triangle.

- 4-D increases toughness without sacrificing either openness or finish.
- 4-D maintains finish without sacrificing either toughness or openness.
- 4-D improves openness without sacrificing either toughness or finish.

In fact, 4-D improves TOUGHNESS and FINISH and OPENNESS all at once.

Thus, 4-D adds a real *Fourth Dimension* to felt design.

The end result of long and intensive research — the new 4-D TREATMENT is a thoroughly tested and proved chemical formula that actually changes the physical and chemical characteristics of wool fibers.

It gives a *higher resistance* to wear — so felts last longer . . . maintains openness and softness . . . improves size stability . . . and protects against both bacterial and chemical attack.

Discuss the new 4-D TREATMENT with your "Man-from-Huyck." It will help you solve your felt problems!

We invite you to write for your free copy of our new booklet describing the new 4-D TREATMENT.

NEW!

HUYCK FELTS

FIRST IN QUALITY . . . FIRST IN SERVICE

F. C. HUYCK & SONS • Rensselaer, New York

Established 1870



* A Huyck concept first presented in an article published in PAPER MILL NEWS, May 25, 1935.

*Have you written
for your copy of this
important new
speed reducer catalog?*



LET US PROVE TO YOU that dollar for dollar Western Gear speed reducers offer unequalled efficiency, reliability and longevity. Take advantage of Western Gear's industrial engineering service when replacing old units or designing new installations. Complete engineering service is yours without obligation.

"The difference is reliability" • Since 1888



**Western Gear's
67 years of
engineering and
manufacturing
skill combine
to make this
the finest line
of speed reducers
ever offered
to industry!**



*For complete information please write
Executive Offices, Western Gear,
P.O. Box 182, Lynwood, California*

PLANTS AT LYNWOOD, PASADENA, BELMONT, SAN FRANCISCO (CALIF.) SEATTLE AND HOUSTON—REPRESENTATIVES IN PRINCIPAL CITIES

Half-ton roll with a gentle touch . . .



The Velvety Smoothness of Tannite's wide nip means better production for You

Consult your Stowe-Woodward sales engineer about the use of Tannite and other Stowe-Woodward rolls in your plant.

The thick soft rubber covering of Tannite couch rolls provides a wide gentle nip with little pressure which offers the dual advantages of better stock formation and finish, combined with extremely long roll life. In maintenance too, Tannite has an inherent advantage: Tannite, unlike most soft rubber covers, grinds easily without scuffing, and does not have so great a tendency to clog or fill the grinding wheel. Usually, only a very light cut is necessary to restore the surface to its original condition. There are other savings in Tannite, too: many mills report that Tannite . . . while not a substitute for synthetic rubber . . . has oil resistant properties which effect substantial savings where it can be used.

"RUBBER ROLLS with a REPUTATION"



STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN — NEWTON 64, MASSACHUSETTS — GRIFFIN, GEORGIA

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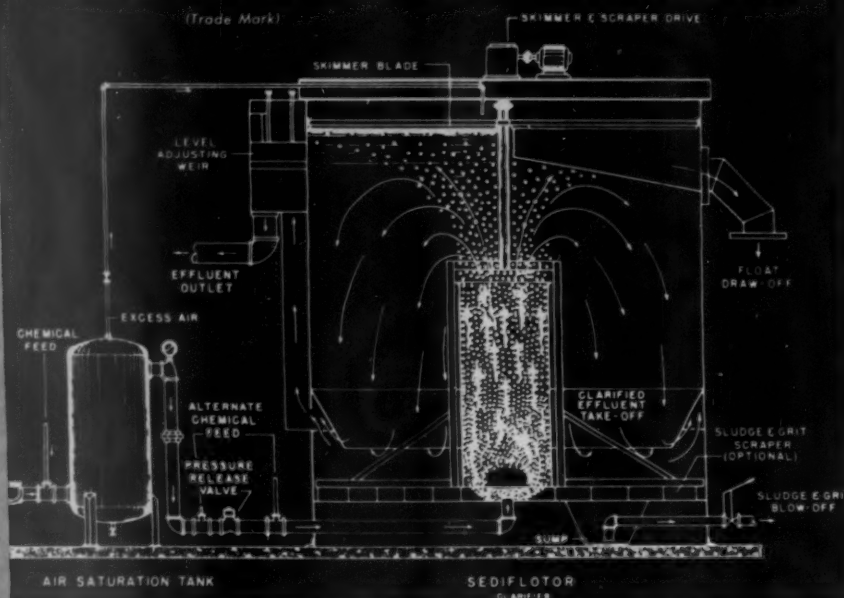
...LEADER IN

WASTE-TREATMENT

EQUIPMENT ENGINEERING presents the

SEDIFLOTOR Clarifier

(Trade Mark)



versatile
new
2-in-1
flotation
unit



1. **"DISSOLVED-AIR FLOTATION"** assures rapid removal of suspended fibre material from white water. Based on the principle of "dissolved-air flotation," and incorporating reliable chemical feed and operating control, the "SEDIFLOTOR" clarifier offers substantial savings to paper mill operators. For example, one plant estimates a saving of about \$180.00 per day recovering pulp and filler from whitewater treated at a rate of 300 g.p.m. Whenever flotation is effective, the "SEDIFLOTOR" clarifier produces a float of maximum consistency in a unit occupying a minimum of floor space.
2. **HEAVY SOLIDS** are also removed. "SEDIFLOTOR" clarifier design provides for the separation of dense materials which are not removed by flotation. This means better clarification regardless of variations in the whitewater. Settled solids are continuously moved by a bottom scraper arm into a sump for removal. The "SEDIFLOTOR" clarifier is readily adaptable for use with present equipment and may be designed for any flow for installation in circular or rectangular tanks.

Our laboratory is equipped to test samples of white water to determine suitable methods and proper size of equipment for your needs. Your inquiry is invited and should include general description of your problem.



The one company offering engineered equipment for all types of water and waste processing—coagulation, precipitation, sedimentation, flotation, filtration, ion exchange and biological treatment.

INFILCO INC. 920 South Campbell Ave., Tucson, Arizona
Field offices in principal cities in North America

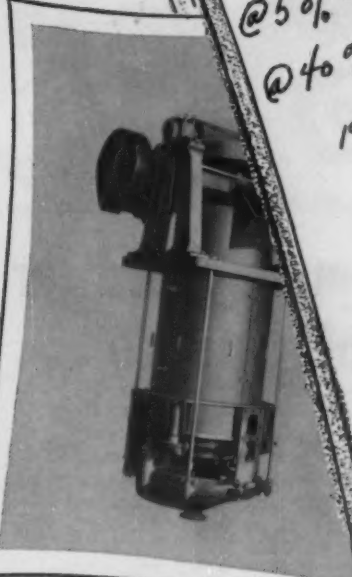
8520A

EVAPORATORS OVERLOADED?

SHORT OF STEAM?

Rejects put back into the system at low consistency can be the cause of the trouble!

Many plants are now solving this problem simply and efficiently by using a Jackson & Church High Density System. Here is what this can mean to you in dollars-and-cents savings . . .



for a plant with 35 tons rejects/day
(700 tons/day production @ 5%)
@ 5% Cons. - 19#/ft fibre
@ 4% Cons. - 1 1/2#/ft fibre

$$19 \times 2000 \times 35 = 1,330,000 \text{ # water/day}$$

$$1 \frac{1}{2} \times 2000 \times 35 = 105,000$$

$$1,225,000$$

$$\frac{306}{1,225,000} \times 0.50 = \$153/\text{day saving}$$

$$\frac{\$153 \times 1000}{153 \times 310} = \$47,430$$

cost

net saving \$27,430 first year!

J-C Zenith* Continuous Pulp Press

*Trademark

Using the Jackson & Church High Density System, great savings can be effected in the handling of rejects! Write for further information on how J-C can help you save!

J-C

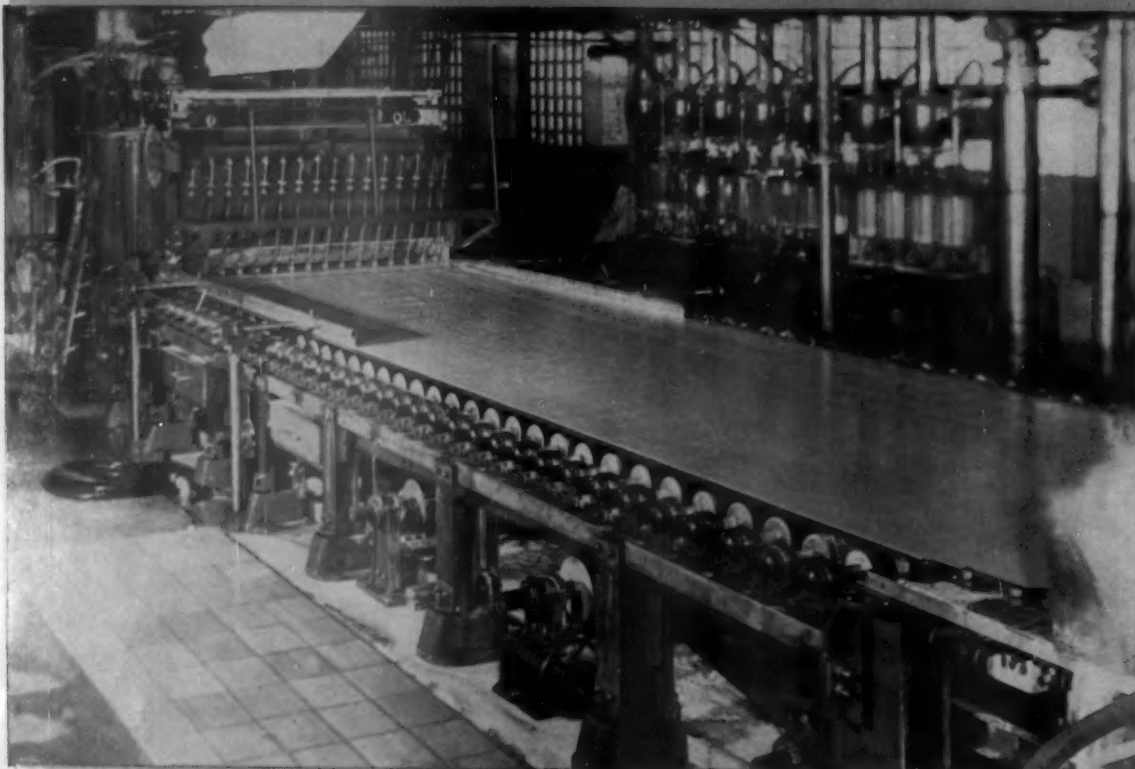
JACKSON & CHURCH CO.

SAGINAW, MICHIGAN

Work well done since eighty-one

For a New Machine or Rebuilding an Old One

PuseyJones — leaders in the design and manufacture of new, high-speed paper-making machinery — have maintained a century-old standard for rugged, performance-proved dependability. Machines like the one mentioned below — built long ago by PuseyJones — are still capable of being increased in speed to meet today's production demands.



THIS FOURDRINIER completely modernized for higher speeds and lower maintenance . . .

This PuseyJones machine at Howard Paper Mills, Inc., Urbana, Ohio, has been modernized from time to time to incorporate improvements in paper-making methods. The latest PuseyJones modernization was undertaken in 1954, when the fourdrinier was completely rebuilt, with only the couch and suction boxes unchanged. Since November 15, 1954, this rebuilt machine has been producing Howard Bond, Ledger, Mimeo and Writing at speeds up to 800 F.P.M.

Outstanding features of the 92" x 75' wire size fourdrinier include rubber-covered A.F.

mounted table rolls; large diameter brass wire rolls equipped with doctors; and heavy-duty shake rails with dual shaking units. Maximum forming area is achieved by placing the wire guide on the return. Savealls and covered shake rails are of stainless steel. An Evans "Rotabelt" is next to the suction couch.

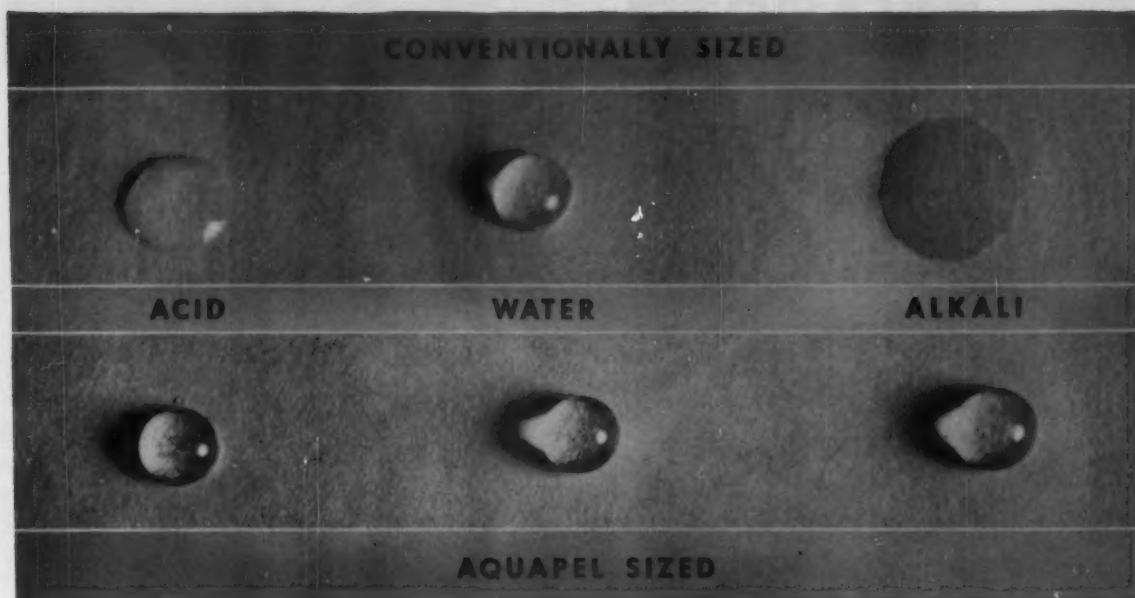
When your production needs require either a modernization or a completely new machine, call in your PuseyJones engineer. He'll welcome the opportunity to work with you in solving your problems.




THE PUSEY AND JONES CORPORATION

Established 1848 : : Builders of Paper-Making Machinery
Fabricators and Welders of all classes of Steel and Alloy Products
Wilmington 99, Delaware, U.S.A.

These Drops Tell the Story:



ACID, WATER, OR ALKALI— IT'S ALL THE SAME TO AQUAPEL®

 More and more paper mills are finding out that a little Hercules Aquapel can make a big difference. The photographs above tell part of the story.

The same grade of paper was used for both tests, but one sheet was conventionally sized; the other was Aquapel sized. Drops of acid, water and alkali were placed on both, and while the conventional sizing has resisted only the water, Aquapel has prevented all three from penetrating the surface.

One of the reasons for Aquapel's superior performance is that Aquapel is not just "another sizing agent". Aquapel is an entirely new concept in sizing for the paper industry. Neither resin nor wax, Aquapel is a chemical compound—an alkylketene dimer. It reacts chemically

with cellulose fibers to form a surface that is resistant to penetration of cold water, hot water, acid and alkali. Aquapel sizing is not just "stuck on"; it becomes an integral part of the fiber.

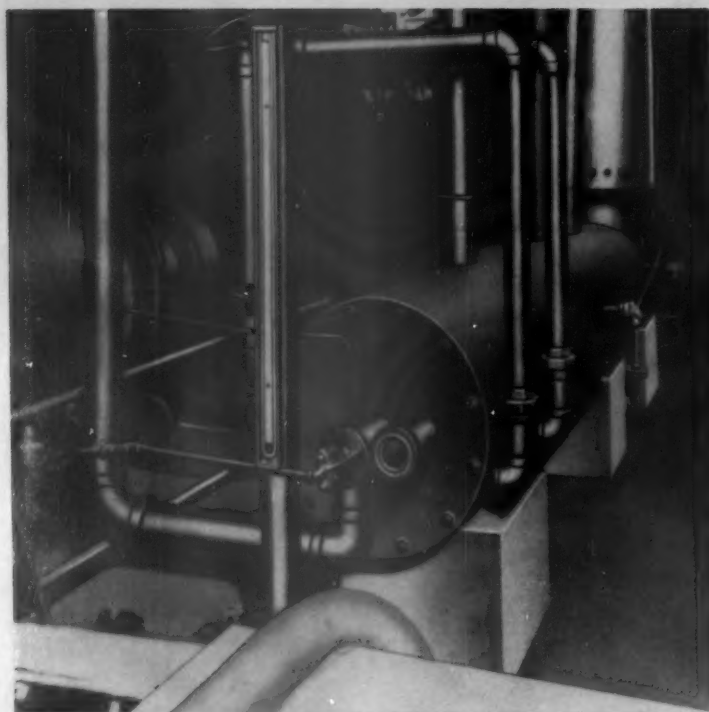
There are other differences. For example, while Aquapel usually is applied on the surface, it is not a surface size in the usual sense. It replaces rather than supplements beater sizing with rosin size and alum.

Aquapel may be applied by any equipment commonly used for surface treatment of paper, such as the size tub, size press, calender box, spray or coating machine. And Aquapel is economical—a little goes a long way.

Investigate the Aquapel difference for yourself. Write Hercules for a sample, and descriptive literature.

Paper Makers Chemical Department
HERCULES POWDER COMPANY
INCORPORATED
965 King St., Wilmington 99, Del.

An Important New Development in Sulphur Burning . . .



Commercial installation of Chemipulp-KC 2½-ton sulphur burner. Note the compact design as compared with conventional burner shown in the background.

Chemipulp-KC *Jet Type* **Sulphur Burner**

**More Compact—
More Efficient**

**Handles Any Type
of Sulphur**

**Long Life—
Low Maintenance Costs**

**Fast Start-Up
Instant Shut-Down**

In the new Chemipulp-KC Burner the molten sulphur is sprayed into the burner as a fine mist. The secondary heated air is then introduced in several stages, resulting in clean operation and long service life.

Because of the small mass, the burner quickly reaches its maximum efficiency temperature of 2100° F., minimizing the production of SO₃. This burner operates efficiently at all SO₂ gas concentrations between 12% and 18½%. At its operating temperature of 2100° F. the bitumen in the dark sulphur is completely burned, so that dark sulphur as well as bright sulphur is efficiently burned. Shut-down is instantaneous.

This unusually compact unit is now available in capacities of 1, 2½, 5, 12, 15 and 25 tons per day, and each different size burner operates efficiently at loads of 25% to 150% of rated capacity. Both installation and maintenance costs of this new burner, which is a development of the KIMBERLY-CLARK CORPORATION Research Program, are considerably lower than rotary burners and combustion chambers of equal capacity.

Chemipulp Process Inc.

Woolworth Bldg. Watertown, N. Y.

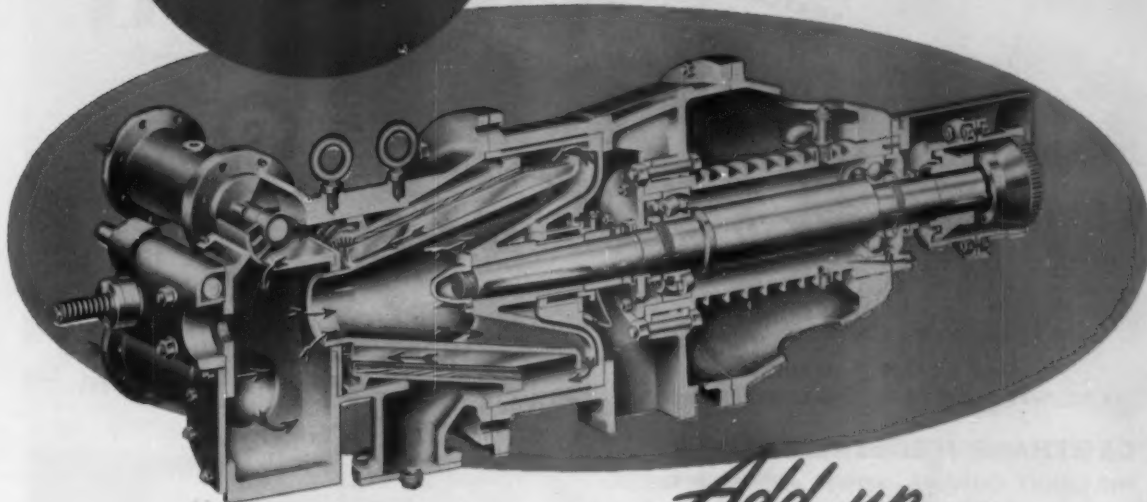
Associated with Chemipulp Process Ltd., 403 Crescent Bldg., Montreal

Pacific Coast: A. H. Lundberg, 308 Orpheum Bldg., Seattle 1, Wash.
Lundberg-Ahlen Equipment Ltd., 146 E. Broadway, Vancouver

MORDEN

Stock-Maker

combines the best time-proven beating principles into one simple versatile machine.



Hundreds of "Stock-Makers" throughout the world, operating on all types of pulps and grades of paper, have proven the effectiveness and efficiency of "Stock-Maker" beating—from light brushing for soft tissue, to medium treatment for writings, wrappings, etc., on up through extreme hydration for greaseproof and carbon.

"Stock-Makers" can be used advantageously for continuous, single-pass, closed-system beating, direct to the paper or board machine. They can be readily adjusted to handle many variations in treatment requirements.

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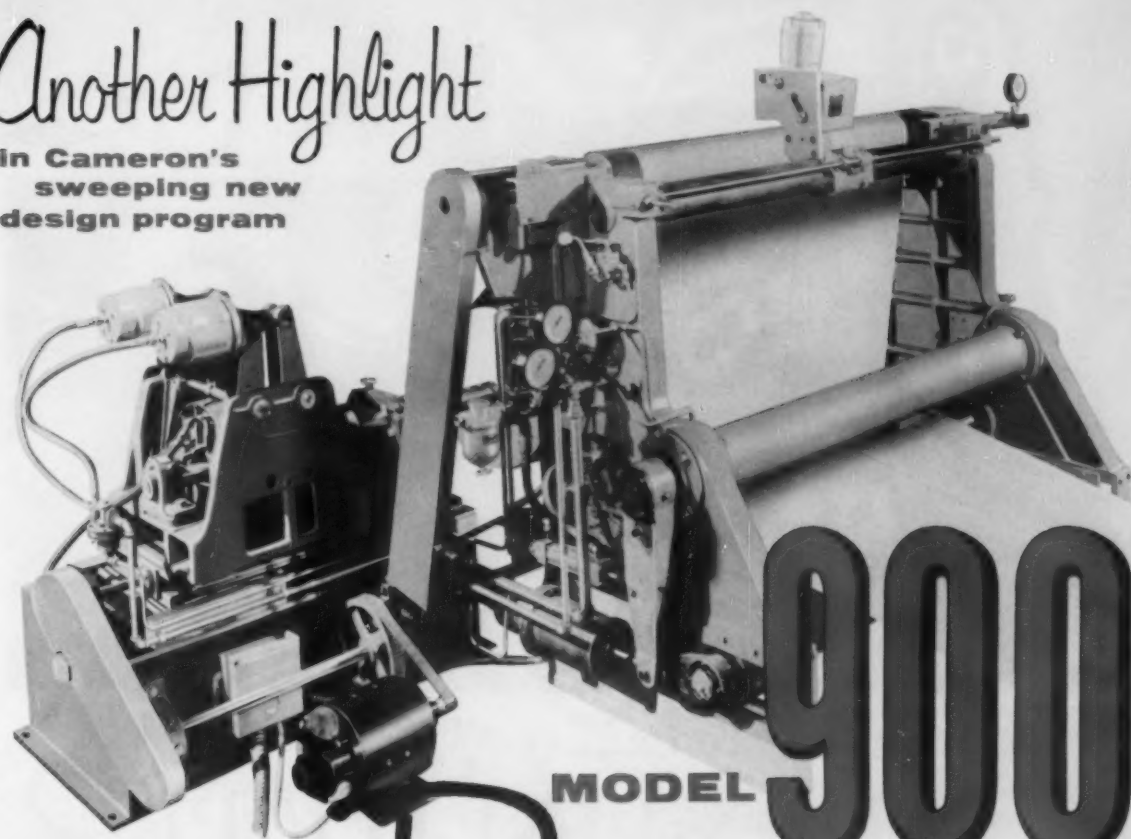
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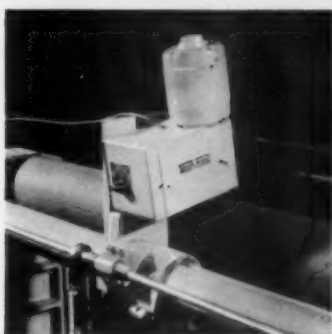
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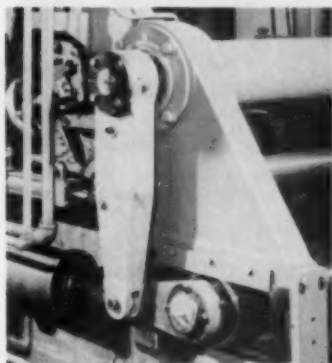
900

Pneumatic Tension



ABOVE: The automatic photo-electric side register control features an anti-backlash, friction free traversing of scanner roll for optimum accuracy and speed of response.

BELOW: The cam-controlled pneumatic pressure tensioning system provides extreme sensitivity in tension control.



THE NEW MODEL 900 pneumatic tension with automatic photo-electric side register control makes it easy to produce better finished rolls of all types of plain or printed materials. In one unit it provides automatic unwind tension control and electronic edge guiding, printed line guiding and printed pattern guiding.

SENSITIVE CONTROL. Extraordinary range and sensitivity of the new 900 permits handling a wide variety of materials, including stretchy plastic films such as polyethylene, vinyl and cellulose acetate; various grades of lightweight paper; and board. The low inertia, low friction tension roll provides automatic slack take-up and cushioning to reduce snap-offs and to maintain constant web control despite parent roll irregularities. The cam-controlled pneumatic pressure tensioning system is infinitely variable from zero to maximum. It is arranged for full stroke dancer roll travel regardless of tension setting. Versatility is apparent in the range of total controlled web tension . . . 200 to 1, or from 5 pounds distributed across the entire web to 1000 pounds.

ACCURATE REGISTER. The newly developed side register control operates instantly and accurately, whether guiding to a printed line or to the edge of the web. Its rate of response and correction is unmatched. On the standard unit the rate of correction is 60" per minute with an accuracy of plus or minus 1/64". The 900, with this control, is being used for high speed production of saleable rolls without trimming, and for hair line guiding on printed materials. A special unit of equal accuracy can be furnished with a correction rate of 120" per minute.

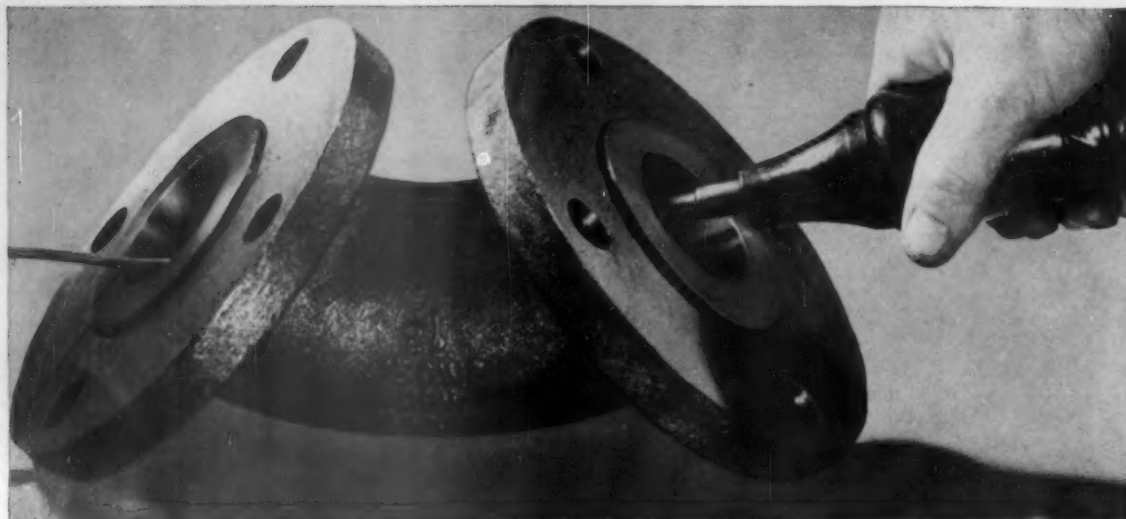
FLEXIBLE. The double-disc, air-operated, water-cooled J-brake on the new 900 meets requirements for running light materials and yet is rugged enough for prolonged runs on heavier materials.

THE 900 is built to handle web widths from 42" to 92" and parent rolls of either 42" or 60" diameter. Built with sturdy one-piece side frames. Anti-friction bearings used throughout. The tension control alone, without the side register control mechanism, is also available.

IT PAYS TO WIND UP WITH A

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SARAN LINED PIPE
 KEEPS SHUTDOWNS TO A MINIMUM

It's made of corrosion-resistant saran pipe swaged into strong, rigid, nonbursting steel. And every piece is spark tested before you buy!

Unscheduled shutdowns are a thing of the past when you use saran lined pipe, fittings and valves to convey corrosive liquids. This modern, trouble-free piping is corrosion resistant . . . forms tight, snug, leakproof joints . . . won't burst under *working* pressures up to 150 psi. And every single piece of saran lined pipe is carefully spark tested by hand to be sure that there are no pinpoint holidays or cracks in its lining. Cast steel lined fittings are available for higher pressures.

Installation costs are surprisingly low with saran lined pipes, fittings and valves, too. They can be cut and

threaded in the field with standard pipe-fitter's tools. Their rigidity means few supporting members are needed.

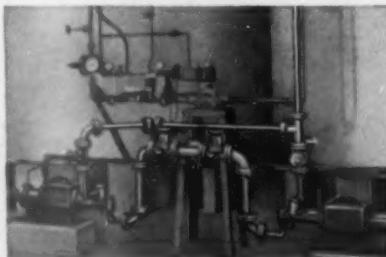
If you want to convey acids, alkalis, or other corrosive liquids at low over-all cost, be sure to investigate saran lined pipe. Contact the Saran Lined Pipe Company, 2415 Burdette Avenue, Ferndale 20, Michigan, Department SP528E-1.

RELATED SARAN PRODUCTS

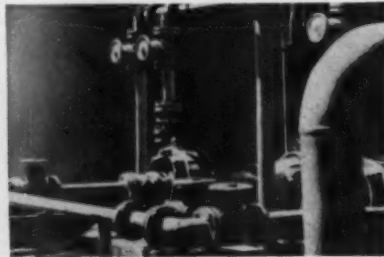
Tank lining • Saran rubber molding stock • Saran tubing and fittings • Saran pipe and fittings.

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*Saran Lined Pipe is Manufactured by
 The Dow Chemical Company
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A large Southeastern paper mill uses saran lined pipe to handle corrosive alum solution. It has proved to be an exceptionally satisfactory answer to eliminating unscheduled shutdowns.



This installation of a large Midwest company has conveyed highly corrosive hydrochloric acid for over seven years. The joints have remained as tight and leakproof as new.

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can be made...

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more profitable

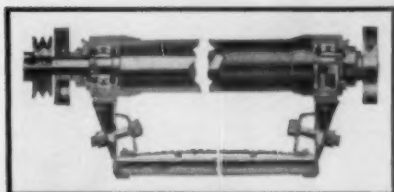


LOW-COST ANTI-POLLUTION PROTECTION is provided by Link-Belt Liquid Vibrating Screen under hydraulic barker. Nearly 1000 gal. per min. are delivered to screen, which removes small bark solids before discharging water to river.

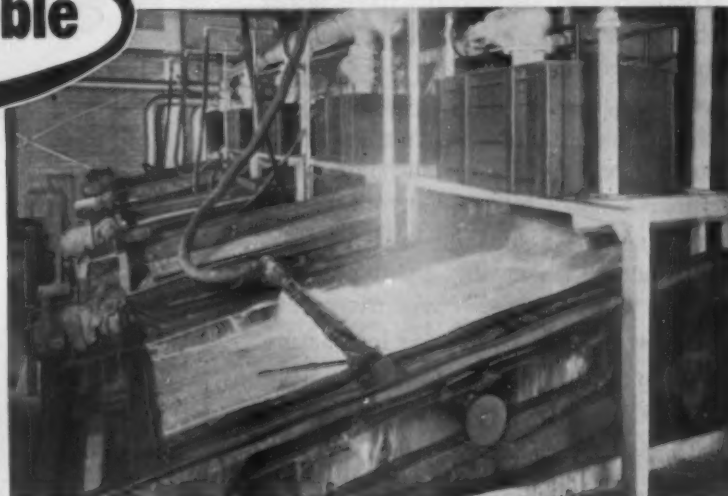
TOP PROFIT from reclaimed pulp is obtained with five Link-Belt Liquid Vibrating Screens, each equipped with a power-propelled travelling spray. Both dewatered pulp and clarified water are returned to the system for re-use.

LINK-BELT

Liquid Vibrating Screens
remove solids quickly,
effectively



Fully enclosed, self-aligning roller bearing vibrator mechanism transmits vibration uniformly to deck. Amplitude can be quickly adjusted in $\frac{1}{4}$ in. increments • Screen cloth supports are designed to prevent flow of liquid under cloth • Patented mounting adjustment maintains the correct tension so important with fine stainless steel cloth.



THROUGHOUT the paper industry, plants which formerly relied on slow, ineffective methods of waste disposal have reduced costs to a negligible minimum... have been able to successfully meet requirements of anti-pollution laws. Others having salvageable wastes now reclaim them at a profit.

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umes of liquids, the efficiency of Link-Belt Liquid Vibrating Screens provides an economical answer. With their special deck which permits use of a very fine screen cloth... plus high-frequency, small-amplitude vibration—maximum solids retention and liquid passage is assured.

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***makes your instrument
men more valuable***

Your instrument maintenance men can get a real education in the most up-to-date methods for servicing instruments, at Honeywell's Training School. Any organization which uses Honeywell instruments can send maintenance personnel to this school. Tuition costs you nothing, for this school is maintained as a "plus-value" service to Honeywell customers.

Thousands of technicians have either started or augmented their instrument knowledge here. A variety of courses is available, to fit men for the particular kind of maintenance problems they may encounter in their specific jobs. The comprehensive course . . . one of the most complete and intensive offered anywhere . . . covers about thirteen weeks. Other courses cover five weeks and less, to offer condensed instruction of either a basic or "refresher" nature to men who can't be spared for extended periods.

There's nothing academic about this school. The emphasis is placed on practical knowledge. Theory through lectures and textbook study is liberally supplemented by laboratory sessions and actual bench work on all types of instruments and related equipment.

One caution: classes have to be limited to assure thorough attention to all students, so make reservations in advance. Your local Honeywell office will be glad to make arrangements. Call today . . . it's as near as your phone.

Control of sheet moisture content is now simpler, more



Moisture detector rolls are mounted across the width of the sheet on the last drying cylinder. Measurements are independent of machine hood humidity, speed and sheet basis weight.

accurate than ever

Improved Moist-O-Graph®

THE latest advances in the electronic *Moist-O-Graph*® bring even greater refinements in sensitivity, accuracy and simplicity to the control of sheet moisture content. A new design, embodying the most modern engineering techniques, gives you these added features:

Fewer moving parts. Simplified construction makes the instrument circuit integral with the measuring circuit . . . eliminates many mechanical components. The new system is all-electronic. It's easier to maintain, and requires less spare parts stock.

Improved control. The new circuit holds moisture closer to the specified value. It incorporates an automatic means for reducing the steam to the dryers during breaks . . . without need for attention by the operator.

Easy calibration. Checks are made quickly by using a conveniently located switch.

With this improved instrumentation, paper makers have a completely automatic method for keeping sheet moisture within far narrower limits than could possibly be achieved by manual operation. *Moist-O-Graph* control ends overdrying and resulting brittleness . . . lets you run a wetter sheet without off-grade wet paper.

The complete control system consists of the *Moist-O-Graph* and its detector roll, plus a secondary pressure or temperature controller. Systems are engineered by Honeywell's paper industry specialists to the individual needs of each installation. For an analysis of your particular requirements, call your local Honeywell sales engineer . . . he's as near as your phone.

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● REFERENCE DATA: Write for *Moist-O-Graph* Bulletin.



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BROWN INSTRUMENTS

First in Controls



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**A
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OF
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**PROVEN ENGINEERING
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PROVEN RELIABILITY
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Sutherland experience gained through 500 installations on an extremely wide variety of pulps and paper grades is available to aid you in better quality, higher production and lower costs. Write the house of experience.

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1955 Review Number—PULP & PAPER

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you more...*
**50% or 73%
Caustic Soda?**

This nomograph can help you decide Are you using the caustic solution that's least expensive for you? A few seconds' calculation with this nomograph will help you decide.

How to find if you can save on 73% caustic soda Simply draw a line from your freight rate (including taxes) to your annual consumption in tons on a dry basis. Your approximate savings will appear where this line intersects the center line of the nomograph.

This figure represents your savings

on freight charges after the \$2.00 premium price on 73% caustic soda has been deducted.

From this figure you must deduct a depreciation charge based on the cost of dilution equipment. Your Hooker technical service man is ready to advise you on the equipment needed and its cost.

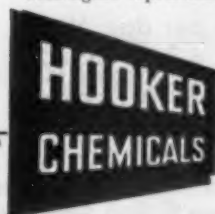
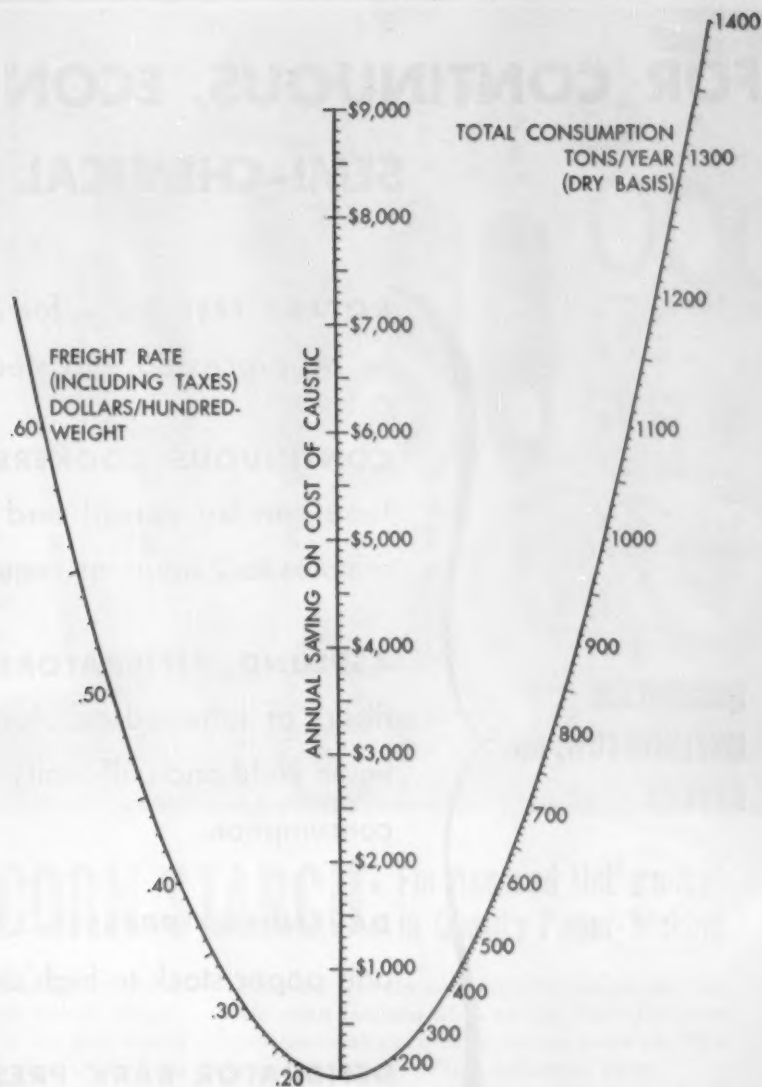
Double-check your findings this way Before you make a final decision on 50% or 73%, give yourself the advantage of expert technical advice. Let your Hooker technical service man

show you what equipment you will need for 73%. He will figure your exact savings—based on a realistic study of your operations.

For quick service, write or phone the nearest Hooker office.



"CAUSTIC SODA BUYER'S GUIDE" is the title of a new pocket-size booklet we'll be glad to send you free. Contains helpful facts on the economics of 50% and 73% solutions; other forms of caustic soda; capacities of tank cars and other containers; useful shipping information. Write us for a copy.



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From the Salt of the Earth—1955

HOOKER ELECTROCHEMICAL COMPANY

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**AMERICAN
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ROTARY FEEDERS . . . for introducing materials to be processed into steam pressure vessels.

CONTINUOUS COOKERS . . . where cooking time can be varied and controlled from 10 minutes to 2 hours as required.

ASPLUND DEFIBRATORS . . . for separating fibers of softened cellulose materials for maximum yield and uniformity with minimum power consumption.

DAVENPORT PRESSES . . . for dewatering pulp and paper stock to high densities.

DEFIBRATOR BARK PRESSES . . . for reducing moisture content of wet bark to 55% or less, for use as fuel.

This complete line of equipment is mill-proven and low in operating and maintenance costs. Our continuous pulping equipment is available to suit your specific needs in units for producing 75 tons of pulp or more per day. Write us for detailed information, facts and figures.

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HERCULES CORN STARCH: brand For Assured Uniformity in Quality Paper-Making

The production of Hercules Brand Corn Starch is under 100% automatic instrument control. This newly perfected process is the only one of its kind. It delivers a starch that meets your specifications exactly!

As a result of fully automatic, completely instrument-controlled production, one batch of a given type of Hercules is just exactly like every

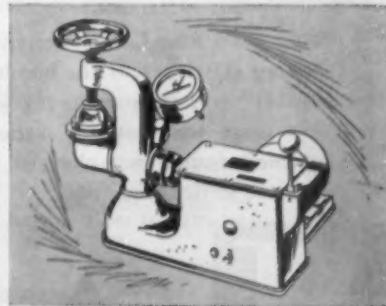
other batch of the same type. So you can see that we mean business when we say: Hercules gives you uniformity of quality you can count on. This pays off for you in two important ways:

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RESEARCH: All Hercules starches have resulted from extensive *research* in the lab and in the field.



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A REPORT
FROM
Roll-O-MATIC'S
FIRST
(AND TOUGHEST)
CUSTOMER!



**AAF General Office Building Serves as Proving Ground
for New Automatic, Renewable Media Air Filter!**

IT looked good on paper; was sensational in the laboratory. But how would it measure up in actual day-to-day service? AAF's General Office Building air conditioning system was selected as the "guinea pig" long before the ROLL-O-MATIC ever made a public appearance.

Never has a filter had a more critical customer. Cleaning efficiency of the bonded glass fiber "blanket" was instrument-checked regularly. Media usage was measured meticulously. Every mechanical feature was observed and evaluated under true service conditions.

After months of this "filter clinic", ROLL-O-MATIC's first customer is also its most enthusiastic. AAF engineers have positive proof of this unit's maintenance-free operation. They know that ROLL-O-MATIC can deliver clean air continuously at an operating cost less than half that of a disposable type filter of equal capacity.

Yes, ROLL-O-MATIC efficiency and cost-cutting operation is a matter of record—a record which is now being duplicated by many installations. For complete facts, contact your local AAF representative or write for Bulletin No. 248.



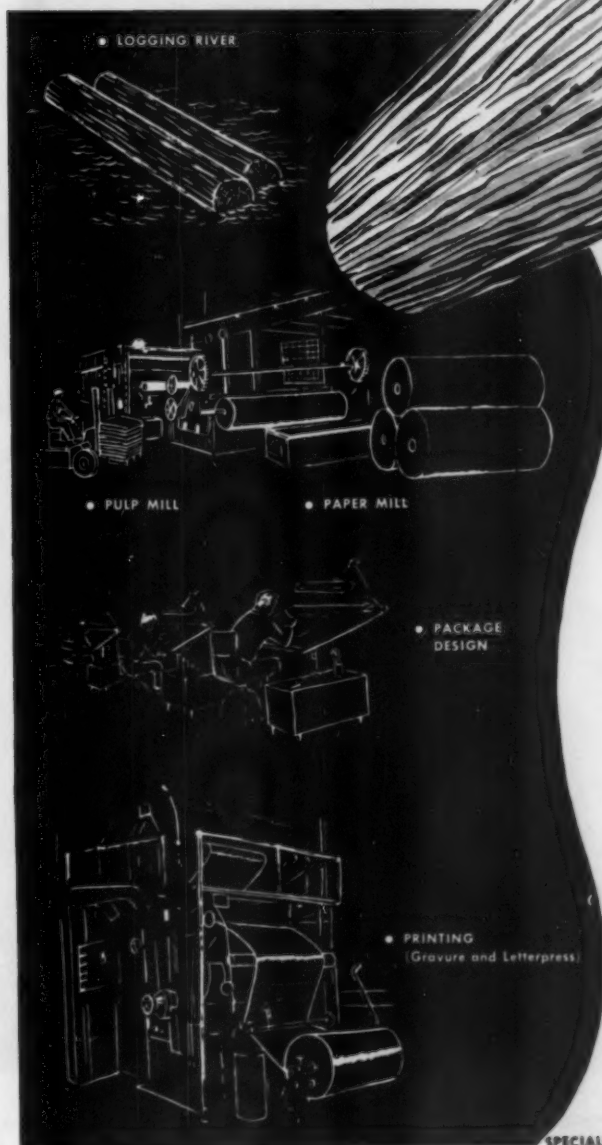
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From the forest to the finished product, integrated KVP facilities lead to consistently superior papers including:

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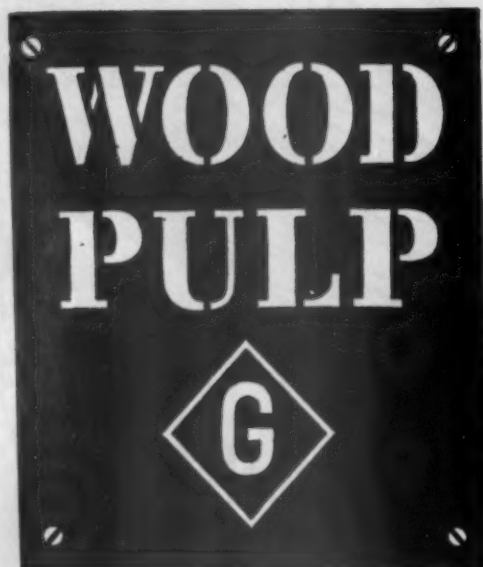
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Established 1886



"No point in time is long ago."

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How many years since Socrates sought truth in Athens? Or since Tom Jefferson, in Philadelphia, wrote words that rang around the world?

Preserved on paper, the product of the Pulp and Paper Industry, the glories of the past stay vibrantly alive—as though no time had passed.



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**PULP &
PAPER**

WORLD PAPER TRENDS

BALED KRAFT PULP in storage area of Kimberly-Clark coated book paper mill, Kimberly, Wis., U.S.A.

Scandinavia still serves over 60% of world import demand, but added supplies must come from New World; Britain is "key" to world woodpulp situation in 1955 as U.S.A. producers head for all-time export record

For Further Expansion, World Looks to

(Copyright, 1955, by PULP & PAPER)

• New world records in woodpulp production and commerce will be established in 1955.

This was "as sure as death and taxes," as the year passed the half-way mark. Woodpulp is in greater demand than ever before in history. The surging economic recovery of Western Europe was the most powerful single factor in the world pulp picture at mid-year. But this rising demand, in varying degrees, was universal. It was especially strong in Latin America.

The outlook for the long term was excellent. The most influential single factor in the long term picture was the shift of major responsibility for future supplies from Europe to Canada and the United States, particularly to the Pacific Northwest and Alaska. There was a comfortable assurance in this fact for the future. The new modern market pulp mills rising in North America were backed by vast forest stands; designed to operate for perpetuity. Trees off millions of acres of public lands were sold, or the lands were leased, on this basis. Without them, the industry in U. S. and Canada could hardly operate at half of its present capacity, but their own lands were superbly managed and highly productive.

Sweden, still the No. 1 exporter of woodpulp, appeared to be leveling off to a pulp shipping tempo which it is more likely to be able to sustain for years to come. Finland, however, is cheered by a new forest survey, much more optimistic than any in the past. Based on it, a 100,000 tons-a-year increase is already projected for several years to come.

In the past year, North America became a net exporting continent for the first time in pulp history—despite the fact that the United States itself consumes about 60% of the paper and other products made from all the world's pulp. Also, for the first time in the history of this industry, the United States exported more pulp than it imported from overseas (excepting, of course, its major source of supply, Canada.)

U. S. A. WILL SET RECORD—

United States woodpulp exports in 1955 will set a new record—easily. As this issue went to press, it looked very much as if they would hit a new all-time record of 600,000 to 700,000 tons, possibly more. This compares with 442,000 tons last year—and a "freak" record of 480,938 tons in 1940 when the submarines had snapped off European shipments. With Scandinavia blockaded, there were U. S. A. shipments of 300,000 to 400,000 for a few years in the early

1940's. But this cannot be compared with the current peacetime entry of the U. S. A. mills in world pulp commerce.

Today, much of the world trade in woodpulp is spurred by the demand for high brightness chemical woodpulp, from both Scandinavian and North American mills. It is in increasing demand in 1955 for rayon, acetate, cellophane and plastics, as well as for paper and board. In many countries, it is mixed with lower quality native fibers for paper or board. World trade in woodpulp this year will exceed the billion-dollar mark.

Total exports of woodpulp in 1954 in the Free World (excluding Russia and satellites) reached 7,277,000 short tons (one short ton is 0.9 metric tons, or 0.89 long tons). This was an 800,-

We Acknowledge Much Assistance, But P&P Is 100% Responsible

PULP & PAPER prepared this review and forecast of the world market woodpulp situation, as it stood in mid-1955, on the basis of information from literally scores of industry leaders in many countries.

Top executives of Swedish, Norwegian, Finnish, British, French, Belgian, German, Swiss, Spanish, Japanese and Latin American pulp and paper industries contributed their thoughts.

They include Juoko Koljonen, Finland, and Oyvind Nossen, Norway, experienced observers and association executives. Also company executives such as Max Schmid, president of Germany's Waldhof mills; Siegfried Aeschbacher, manager of Swiss mills; William F. Boks, veteran pulp sales executive of Antwerp; Antonio Sabates, president of Spain's biggest paper industry, and executives in Sweden, Norway, Britain and France, whose names we cannot divulge.

James L. Ritchie, executive director of the U.S. Pulp Producers Association, who returned in June from a tour of Europe (*prima facie* evidence that U.S.A. mills are seriously in the export business); Reed R. Porter, executive secretary of the Association of Pulp Consumers Inc., and William M. Barrett, vice president of Mead Pulp Sales Inc., who was the chosen spokesman for the American pulp industry at the May 1955 meeting of the National Paperboard Association, and others contributed much valuable information.

The views expressed in this article are believed well founded upon facts. However, they are PULP & PAPER's own views. It is not necessarily to be assumed that any of the above named persons concur in them. But it may be stated with assurance that most of them agree with *most* of the observations.

America for Pulp

000-ton rise over the total for 1953 and compares with 5,878,000 in 1950.

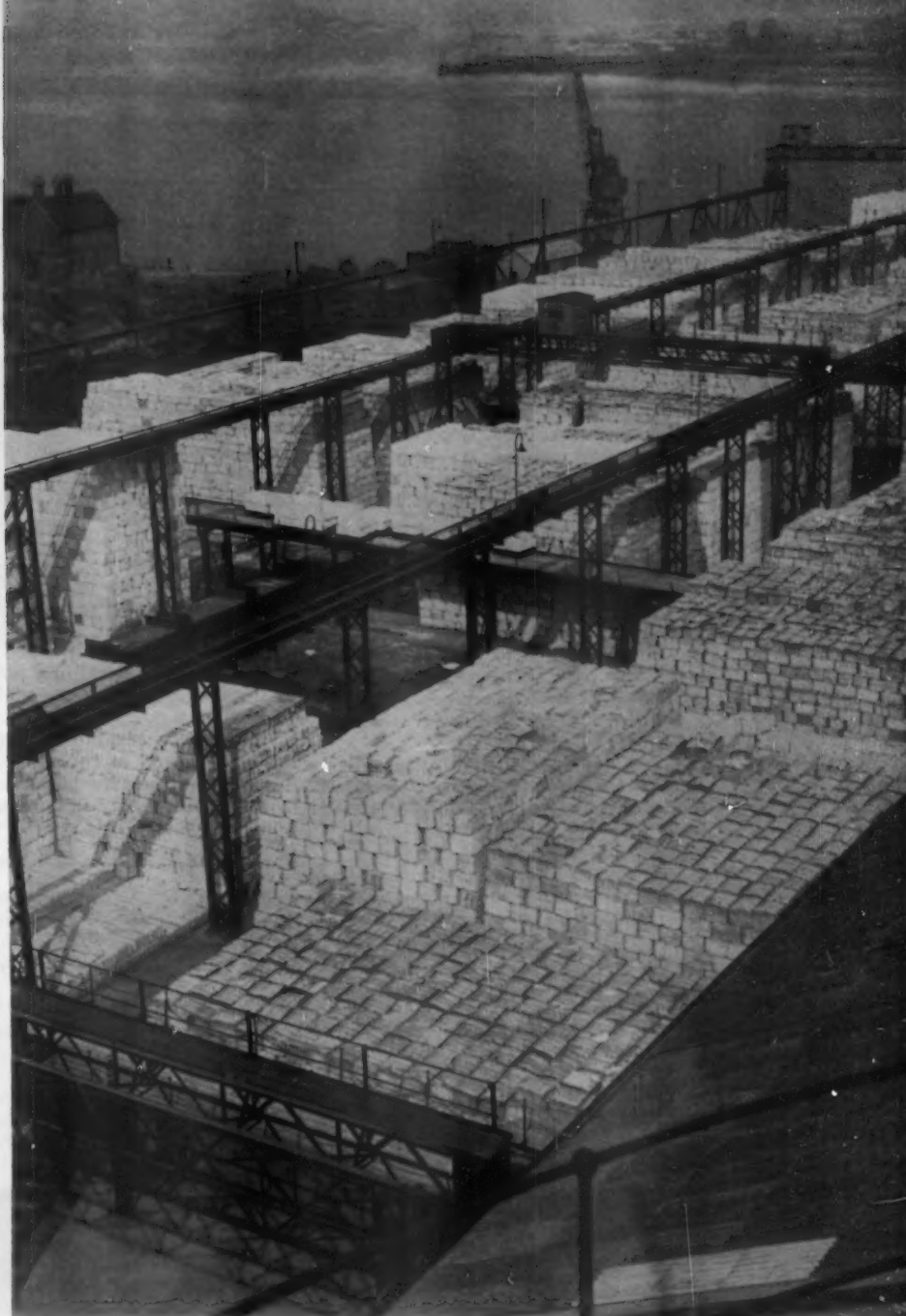
Total world production of woodpulp in 1954, according to data gathered by the U. S. Pulp Producers and Canadian Pulp & Paper Associations, was 41,741,000 short tons, which compares with 39,047,000 in 1953, and this was a new all-time record. There is every indication there will be a new one set in 1955.

WHERE RUSSIA STANDS IN WORLD PULP—It is estimated that Russia and its satellite countries made close to 5,000,000 tons of woodpulp in 1954. East Germany, Czechoslovakia, Poland and Russia itself are substantial producers, but rank behind Sweden, Canada, the U. S. A. and Finland. Red China may make a half million tons in small mills, using it all, but this would be less than any one of a half dozen Western World nations, and less than one-third of Japan's output.

In the woodpulp export world, the United States has made a sensational rise to a position among the leaders. In Britain, France and West Germany, woodpulp imports rose 21% in just one year—1954—and 23% of their demand was fulfilled by U. S. A. mills. Their demand and U. S. A. supply both are substantially greater this year.

What is significant about this new trend is that North American mills—U. S. and Canadian—fully expect to maintain their rate of shipments overseas. At the same time, they expect to fully meet demands of domestic purchasers—North American paper and board mills as well as rayon, acetate and cellophane manufacturers.

Actually the level of the U. S. A. shipments abroad in June, 1955 was close to the level that had been maintained since June 1954.



Britain is the "Key" to Pulp Situation in 1955

The No. 1 customer for both Europe and North America, Britain imported over 2,000,000 tons of woodpulp in 1954, up 20% from 1953. This view shows some of Britain's imported woodpulp stacked at Bowaters Thames Mills, near Gravesend, Kent.

WHAT ABOUT 10 TO 20 YEARS HENCE?—The sheer pressure of increasing populations will force upward the requirements for more pulp. In just 10 years, North America alone is expected to add 30,000,000 people. Per capita consumption of woodpulp in all North America is now gone well beyond the mark of 300 lbs. each. So, just for this continent alone, on the basis of population growth, an additional 4,500,000 tons will be needed by 1965.

But that is a modest guess, as compared with the Stanford Research In-

stitute report of 1954 which estimates in 1975—just 20 years hence—U. S. A. woodpulp consumption alone will rise to 36,100,000 tons, double the 1952 figure. This does not take into account export demand.

Any substantial increase in woodpulp supply for Europe will have to come from North America. All the data available on potential supplies from chief pulp exporting nations shows this to be true.

Is it possible that world demand for woodpulp could double its present 41,000,000 tons figure in 20 years?

WORLD PULP TRENDS

Tropical woods probably would have to help meet such a demand. Britain's imports reached a record figure of 2,149,750 short tons last year, up 350,000, and they are rising at a faster clip than in any other country. In France and West Germany, the rate increase in demand is greater than in U. S. A. The United Nations' Agriculture and Food Organization predicts world woodpulp consumption will rise to 50,000,000 tons in just five years—1960. It was only 32,000,000 tons in 1950.

In PULP & PAPER'S 1954 WORLD REVIEW NUMBER, published in middle of that year, it was predicted that new records and new patterns in commerce would be set in worldwide commerce in woodpulp before that year was out. Both predictions came true. As for records, many that stood for 18 years in some countries, had fallen.

In the year 1955, the new patterns of world woodpulp commerce will remain at substantially the same, with the role of U. S. A. continuing to grow. But records again will tumble in virtually all countries—for production, as well as for exports, or imports, depending on the country.

HOW COUNTRIES RANK—The great exporting nations in woodpulp, in order, are:

1—SWEDEN. Exports of 2,409,000 short tons were only slightly over the previous year's 2,385,000. But chemical pulp exports of 2,058,430 almost broke the 1937 record of 2,420,000. Sweden made nearly 4,000,000 tons, consumed more than ever before.



Scandinavian Pulp Finds Its Way to Pakistan

One of world's newest countries, Pakistan, gets its pulp from world's biggest exporter. Here Norrland pulp from Kopparfors Aktiebolag, Ockelbo, Sweden, is put into pulper at new Karnaphuli Paper Mills, East Pakistan.

The Free World's Stake in Woodpulp— See Editorial Page—Page 4.

The defense and prosperity of the Free World depends, in large measure, on a strong and stable woodpulp industry. A multitude of woodpulp products—from gunpowder to newsprint, tire cord to cellophane, a fast-growing list—is proof of that fact.

About 63% of the woodpulp shipped across frontiers of Free Nations today is made in Scandinavia, historically the backbone of the world's pulp converting industries. But today, the chance to increase woodpulp consumption in Free Nations, to carry on with the phenomenal economic resurgence of West Europe, and to satisfy the awakened needs of 160,000,000 Latin Americans, and at the same time to satisfy North America's own needs, lies almost solely with the growing North American woodpulp industry. Its 47% of the world's market pulp supply is increasing each year. It has the forests, the capital, the "know-how" and—not least of all—it is in the best-defended Free World areas.

On page 4 of this issue, PULP & PAPER recalls when it contended, a voice entirely alone in the publishing world, for a strong North American woodpulp industry. Its contentions brought frowns in Washington. A Secretary of State even took issue with PULP & PAPER.

But today, that editorial "crusade" by PULP & PAPER was never more right, and in the interests of the North American paper industry, rayon-acetate industry and other pulp converters, as well as those of friendly nations abroad, it is a crusade that merits a rejuvenation.

Shipments to U.S.A. dropped off sharply, but it concentrated on competing with North American mills for European and Latin American markets.

2—CANADA. Exports of 2,180,416, compared to 1,944,000 was a record. Not only that, it was a pretty sure sign that in a year, or maybe two, Canada will forge ahead of Sweden for the first time in the history of trade in this major basic industrial commodity. Canada shipped about three-fourths

to U.S.A.—1,669,783. Britain got 270,000 tons, France, Japan and Argentina were next biggest buyers from Canada.

3—FINLAND. Exports of 1,300,000 tons, compared with 1,095,000 in 1953. Just over 1,000,000 tons in 1954 were quality chemical pulps. Finland continues to show interest in U.S.A. markets, as well as Europe and Latin America. Its newest forest survey reveals it has more trees per acre than any country in Europe—approximately 70% of Finland is forested and the quality is better than previously reported.

4—NORWAY. Exports of 674,520 tons, about even with 1953's 662,000. Unusual about Norway's exports—nearly two-thirds are in groundwood. Actually, its chemical pulp exports declined in 1954, while groundwood shipments rose to a new record of 424,000 tons. All other exporting nations are more interested in meeting demands for higher quality chemical pulps, which incidentally bring higher prices, too. Norway's groundwood mostly goes to Britain and nearby markets.

5—UNITED STATES. Its overall total of 441,863 tons exported in 1954 compared with 162,000 in 1953, 212,000 in 1952, 121,000 in 1949, 39,000 in 1946, and only 48,000 in 1930. The abnormal 300,000 to 480,000 war years when Scandinavia was blockaded already have been mentioned. Of the 1954 exports, half



Peaceful Scene To See Big Change

This quiet pastoral scene along the banks of the Chehalis River at Cosmopolis, Wash., U.S.A., will in two years be transformed into one of great industrial activity. Weyerhaeuser Timber Co.'s new 400-ton market pulp sulfite mill will be built here, on land formerly owned by the Ultican family, well-known lumbermen in the Grays Harbor area. An oddity in the transaction is that the Ultican sawmill (left center) is being removed; it has been painstakingly constructed during the last two years and was ready to saw lumber just before the deal was completed. (PULP & PAPER staff photo.)

went to Europe. U.S.A. shipped 108,000 to Britain, 46,000 to West Germany, 35,000 to Argentina, 30,000 to Japan, 28,000 to Mexico, 21,000 to Cuba, 20,000 to Brazil, 16,000 to France, 14,000 to Holland. But—believe it or not—guess who was second biggest importer of U.S.A. pulp—Canada, 47,466 tons!

6—AUSTRIA. Its exports rose from 132,000 to about 160,000. This was near its 1937 record of 162,000. Austria's expansion in both pulp and paper has been largely financed by U.S.A. An exclusive report in Feb. 1955 PULP & PAPER reveals that \$40,000,000 went to Austria in U.S. aid funds, largely for new mills or for purchase of pulp and paper. Allotments of \$80,000,000 for pulp-paper to Britain and \$15,000,000 each to France and West Germany were for purchases rather than mills.

7—WEST GERMANY. Its exports rose from 31,000 to 46,000. Its economic resurgence has been the greatest in Europe. Even while adding to its own pulp and paper mill capacities, it still was a major purchaser of pulp, especially from U.S.A., as well as Scandinavia.

8—NEW ZEALAND and PORTUGAL. Each tied with 23,000 tons exported. Here are a couple of "sleepers" to keep an eye on.

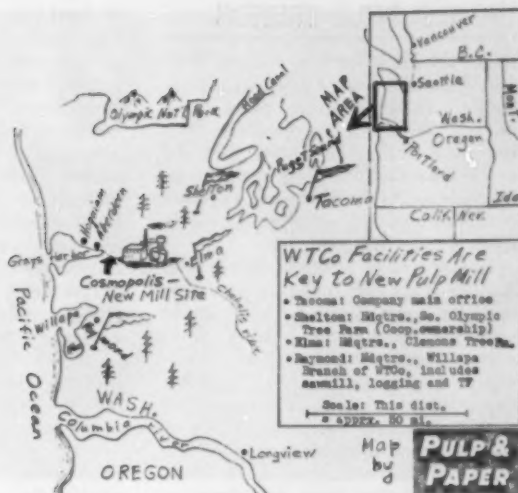
New Zealand's pulp and paper industry is expanding rapidly, because of the fast growing "radiata" pines imported there, a species growing much

faster there than they even did in America. It made almost 80,000 tons of pulp in 1954, twice what it did in 1953—but it is only scratching the surface, all experts agree. Australia is its market; potentially the Near East (with peace).

Portugal has large forests, more than it needs. A new pine-kraft mill has boosted output. Strangely enough, a little mill using eucalyptus for a very fine quality bleached sulfite pulp, the Caima mill, has been selling on the world market for years. Regularly it has found eager buyers for 7,000 tons of bleached sulfite. Now it has doubled that output.

Belgium shipped 17,000 tons last year, Yugoslavia exported 7,000 and is going to boost that—with more bleached sulfite. Holland ships Britain a large quantity of straw pulp, and its strawboard industry is big. But in the woodpulp world, one other important exporter of the past, Japan, is now an importer. Switzerland has one market sulfite mill. For more details on these countries, see the individual sections on each country in this WORLD REVIEW.

IN EUROPE, WHERE COMPETITORS MEET—The Scandinavian nations as a group—Sweden, Finland, Norway—are still dominant in the world export market. Together, they exported close to 4½ million tons, nearly 2,000,000 more than Canada. U.S.A. They shipped 1,715,000 tons to



Site of Biggest Weyerhaeuser Mill

Biggest pulp mill ever built by Weyerhaeuser Timber Co. will rise at Cosmopolis, Wash., U.S.A., a 400-ton-a-day bleached sulfite woodpulp mill, whose products will go to converters in many countries. This will be Weyerhaeuser's 7th woodpulp mill. Vast stands of Western hemlock in three Tree Farms will serve it. It will be the 3rd mill in world to use magnesia base sulfite cooking and recovery cycle, whereby both chemicals and heat energy are recovered. Mill will cost \$20,000,000; be finished in 1957. Even before this was announced Washington State led all others in U.S.A. in woodpulp production.

Britain, 528,000 tons to France, 372,000 to both East and West Germany, 367,000 to U.S.A. (U.S.A. has in the past been their first or second customer, usually), 252,000 to Argentina, 238,000 to Brazil, 230,000 to Greece, 226,000 to Italy.

But it is in Europe, particularly, where the Scandinavians have come face to face with a new, growing competition from the high quality mills built in America. It has been a challenge, such as the Scandinavians had never faced before. This is happening in Latin America, too.

European importers have written to PULP & PAPER, in response to inquiries from this magazine, testifying quite openly that they are pleased and greatly relieved by this new "healthy competition." They write that it has brought about a stabilization of prices

Forested Areas of World

	Acres
Europe	313,000,000
U.S.S.R.	2,273,000,000
North, Central America ..	1,887,000,000
South America	1,843,000,000
Africa	2,266,000,000
Asia	1,166,000,000

This totals over 9 billion acres, much presently rated inaccessible. Inaccessible is about two-thirds in Russia and Canada, about one-third in U.S., and nearly all in South America, Africa and the rest of Asia. So this would leave about 700 million accessible acres in North America. Against this, Europe has about 313 million productive acres, of which 126 million are in Scandinavia.

WORLD PULP TRENDS

for them. They are now able—in Britain, France, West Germany, Spain, Italy—to make long range plans, without fear of pulp price upheavals. They have stated in their letters that the new competition has “restrained” price fluctuations. In the interest of Europe’s economic growth and development, this can only be good.

Europe today is where the U.S.A. was 25 years ago in the modern uses of paper—for packaging, for household uses, for 100 and one things. It is going places with paper, as a substitute for tin, wood, etc., and for many other uses. That means an “insatiable demand” for pulp, as one of PULP & PAPER’s correspondents writes. These comments have come largely in letters from presidents or general directors or managers of paper companies in those countries as well as in Latin America.

LATIN AMERICAN DEMAND IS GROWING—More pulp and paper is in demand each year for Latin America’s 160,000,000 inhabitants. With pictures, telegraphic reports and direct reports by experts, PULP & PAPER told the story in its Dec. 1954 issue,

of the Latin American Conference of Pulp and Paper Experts, held in Buenos Aires, first meeting of its kind.

There were 89 delegates in attendance, many from Europe and North America, and numerous projects for new mills in Latin America were discussed. The U.S.A. paper industry, through its national organization, offered to help technically in reaching financial support, to expand the Latin American industry. A major conclusion of this meeting was that market woodpulp, especially high quality bleached grades, would be in greater demand, to mix with local pulps or bagasse. Already, many Latin American mills mix northern woodpulp with their own grades or bagasse. It has been a necessity for writing or printing papers, tissue, boxboard and paperboard grades, etc.

If world demand for woodpulp of the qualities made from coniferous trees continues to rise, where will that pulp come from? Better pulps are made every year from hardwoods, and tropical forests may some day open up a new world resource, but at present the qualities of northern pulps are not only in demand—they are necessary. They will come from North America, largely. Finland is going to expand;

Russia is an unknown entity as to export (it has exported even pulpwood in the past); Finland will increase its exports, no doubt, to some degree. New Zealand is an important potential source, but far away from present markets, except Australia. Japan has over-cut and is importing now.

MANY “EXPERTS” WERE FOOLED

—Just a year ago, many experienced observers were expressing the view that the new market pulp mills then coming into production—Ketchikan, East Texas, Rayonier, Buckeye-Cellulose, which followed International Paper’s, Weyerhaeuser’s and MacMillan’s additions—were pushing the world into an over-supply situation. Nothing could have been further from the facts of life. The first four named added about 1,300 tons a day in just a few months’ period in 1954. Yet if it had not been for the construction of these mills, there would have been a serious shortage of pulp today—not only for many U.S.A. paper mills and rayon-acetate mills, but also for Europe.

NEW MILLS PLANNED—More big modern new market pulp mills will come into production in the next year or so.

World Woodpulp Summary—What Free World Produced and Traded

(Rest of World—Russia and Satellites—Estimated to Have Produced 5,000,000 tons in 1953. Sources—U. S. Pulp Producers, Canadian Pulp & Paper Assn.)
(In Thousands of Short Tons of 2,000 lbs.)

	1953			1953		1954			1954	
	Capacity	Production	Consumption	Imports	Exports	Capacity	Production	Consumption	Imports	Exports
TOTAL CHEMICAL	28,563	25,472	25,660	5,267	5,327	30,884	27,502	26,931	5,790	6,026
North America	19,238	17,640	17,827	1,929	1,873	20,804	18,694	18,048	1,856	2,318
Latin America	202	149	449	293	0	205	169	574	416	0
Europe	7,642	6,530	6,077	2,824	3,449	8,216	7,300	6,752	3,301	3,684
Northern	5,704	4,592	1,719	15	3,250	6,071	5,370	1,943	23	3,438
*Eastern	58	50	69	34	11	72	64	89	35	11
Western	511	399	2,605	2,102	21	541	491	2,835	2,454	26
*Central	1,369	1,489	1,684	673	167	1,531	1,375	1,885	789	209
South Africa	26	26	30	7	0	33	28	31	3	0
Egypt	0	0	7	5	0	0	0	7	9	0
Asia & Pacific	1,455	1,127	1,270	209	5	1,626	1,311	1,519	205	24
TOTAL MECHANICAL	15,954	13,575	13,403	1,131	1,150	16,590	14,239	14,096	1,203	1,251
North America	10,205	8,686	8,673	262	228	10,576	9,027	9,023	236	224
Latin America	190	157	186	28	0	200	170	199	28	0
Europe	4,562	4,014	3,790	838	922	4,800	4,273	4,097	932	1,027
Northern	2,756	2,363	1,409	3	905	2,866	2,543	1,505	1	1,020
*Eastern	43	36	39	4	0	54	47	52	5	0
Western	728	601	1,399	798	0	756	645	1,495	889	0
*Central	1,035	1,014	943	33	17	1,124	1,038	1,045	37	7
South Africa	-	-	2	3	0	-	-	2	1	0
Egypt	0	0	0	0	0	0	0	1	1	0
Asia & Pacific	997	718	752	-	0	1,014	769	774	5	0
GRAND TOTAL	44,517	39,047	39,063	6,398	6,477	47,474	41,741	41,027	6,993	7,277

* Capacity figures for these areas are not available in every instance. NOTE: Imports and Exports include inter and intra zonal movements.

These include North Western Pulp & Paper's 400 ton bleached kraft mill at Hinton, Alberta, Canada, built and operated by St. Regis; Weyerhaeuser's 400-ton bleached sulfite mill at Cosmopolis, Wash., biggest ever to be built by that company; Crown Zellerbach's expansion in Canada, including a new potential for market pulp; Mac-Millan & Bloedel's program for more kraft pulp, and more bleached pulp, too; B. C. Forest Products' plans for a market bleached kraft pulp mill on Vancouver Island; Rayonier's heralded plans for a new dissolving pulp mill, presumably flush alongside its Jesup, Ga., operation or near there; Alaska Pine & Cellulose's expansion at Port Alice, B. C.; Georgia Pacific Plywood's program for mills in both Alaska and Oregon; and other potential mills in the planning stage by other big companies now best known for their lumber and plywood on the Pacific Coast. Besides this, Southern United States mills are moving more and more into the market pulp picture, selling a portion of their output, and their resources are among the greatest in the world.

WHY THE U.N. NOTE OF DESPAIR?—Face to face with this

CHEMICAL WOODPULP DATA BY COUNTRIES—FREE WORLD

By PULP & PAPER from reports of U. S. Pulp Producers and Canadian Pulp & Paper Assn.

(For 1954—in Thousands of Short Tons)

	Capacity	Produced	Imports	Exports
Canada	4,430	4,118	48	1,938
United States	16,374	14,576	1,808	380
Argentina	27	19	106	0
Brazil	103	91	167	0
Chile	0	0	47	0
Colombia	0	0	14	0
Cuba	0	0	32	0
Mexico	75	59	44	0
Venezuela	0	0	6	0
Finland	1,822	1,716	0	1,078
Norway	279	649	23	331
Sweden	3,470	3,005	0	2,029
Greece	0	0	29	0
Turkey	29	23	2	0
Yugoslavia	44	41	4	11
Belgium	41	42	175	17
Denmark	0	0	63	0
Eire	0	0	34	0
France	378	364	509	9
Britain	17	15	1,412	0
Holland	66	40	181	0
Portugal	na	na	na	na
Spain	39	30	80	0
Austria	483	452	13	159
Czechoslovakia	na	na	na	na
East Germany	722	713	388	46
West Germany	227	116	320	0
Italy	99	94	68	4
Switzerland	na	na	na	na
So. Africa	33	28	3	0
Egypt	0	0	9	0
Australia	103	103	48	0
China	na	na	na	na
India	1	1	18	0
Japan	1,472	1,162	122	1
New Zealand	50	45	7	23
Pakistan	0	0	10	0
TOTAL	30,884	27,502	5,790	6,026

na—Not available. Other countries not available.



Cellulose from Southern U.S.A. Heads for West Germany

For the revitalized rayon industry in Free West Germany, this is part of a 1,000 ton shipment of chemical cellulose loaded on the SS. Oomorsum in Savannah, Ga., in Southern U.S.A. It is going to the V. Glantzstoff mills of West Germany. It was made in Rayonier Inc.'s new Jesup, Ga., mill.

planned, even announced, expansion, are some reports that Europe will not need overseas pulp in the near future.

Issued by United Nations and its divisional international agencies in the face of the obvious increasing resource in America, these reports have been quite a puzzle to many observers. It would seem too silly for serious consideration that the Communists, who have a considerable voice in U.N., would seek by this means to curtail future Canadian-U.S.A. trade with Europe, as well as with Latin America.

The possibility of the European "have not" nations reversing the increasingly tight domestic wood and pulp supply situations they face, to any important degree, is too fantastic for serious consideration. Of course, it is going to use more hardwoods, and other vegetable fibers, but for the bulk of its pulp supply, it must now look to Scandinavia and, more and more, North America primarily. For the United Nations agencies to build up a propaganda that envisages a day when Europe won't need this supply, might be aimed at discouraging North American producers from making long term plans to continue serving European needs in excess of those filled by Scandinavia. Is the United Nations, then, being used for propaganda purposes to restrict North American woodpulp capacities?

In this connection, it is well to remember that chemical woodpulp is now the source of nitrocellulose for firing most guns, and all the products of high grade woodpulp, from the strongest tire cord for planes and tanks to containers for shipping and map paper and printing papers, are prime

essentials in wartime. The now mighty North American woodpulp industry, in reality, has become a defense industry for the whole Free World. Recalling that Scandinavian mills were cut off from the world in the last war at its outset, this fact becomes even more significant.

MECHANICAL WOODPULP DATA BY COUNTRIES—FREE WORLD

By PULP & PAPER from reports of U. S. Pulp Producers and Canadian Pulp & Paper Assn.

(For 1954—in Thousands of Short Tons)

	Capacity	Produced	Imports	Exports
Canada	5,988	5,408	4	224
United States	4,588	3,619	232	0
Argentina	37	15	21	0
Brazil	110	110	0	0
Chile	23	20	—	0
Colombia	0	0	7	0
Cuba	0	0	0	0
Mexico	30	25	0	0
Venezuela	0	0	0	0
Finland	1,102	909	0	221
Norway	937	812	—	419
Sweden	827	822	1	380
Greece	0	0	5	0
Turkey	32	26	0	0
Yugoslavia	22	21	0	0
Belgium	72	62	15	0
Denmark	6	4	21	0
Eire	11	10	4	0
France	350	331	110	0
Britain	157	134	672	0
Holland	72	71	55	0
Spain	88	33	12	0
Austria	182	164	0	4
West Germany	612	604	24	0
Italy	231	171	12	0
Switzerland	99	99	1	3
So. Africa	—	—	1	0
Egypt	0	0	1	0
Australia	103	92	5	0
India	4	4	0	0
Japan	860	640	0	0
New Zealand	47	33	0	0
Pakistan	0	0	0	0
TOTAL	16,590	14,239	1,203	1,251

Other countries, not available or had no mechanical production or trade.

WORLD PULP TRENDS

HOW WORLD "RESPONSIBILITY" HAS SHIFTED—Today it is the "have nations"—those with the coniferous forests—Canada, U.S.A. and Finland, especially—that account for the lion's share of the increase in pulp output. This trend will continue, and probably will shift more heavily to North America each year. Because in North America is found the fortunate combination of accessible forests, capital and "know-how."

This means a sharing of world responsibility and statesmanship for the direction and conduct of business in world pulp commerce by North American and Scandinavian producers. The North Americans will have the greater control because expansion of pulp supply must largely come from them.

Alongside this development is the amazing growth of consumption of woodpulp by the "have not" nations; namely, Britain, Germany, France and Latin America. These account for most of the increase in pulp consumption in 1954, as they are doing in 1955.

WHY BRITAIN IS THE "KEY"—In 1954 and in 1955, Britain stands as the principal "key" to the world pulp market. Its 50,000,000 people, using 165 lbs. of paper each, is setting a standard that is high—even though per capita use so far is less than half that of U.S.A. Tonnagewise, Britain is the second biggest consumer of pulp, after the U.S.A., and consumption is growing much faster per capita than in the U.S.A.

Britain is thus the pace-setter. The large tonnage taken by British mills in the next year or two can influence greatly whether the pulp market is

**Every month in PULP & PAPER read:
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**"What's New in the World of Woodpulp"
"Noticias Mundiales de la Industria Pulpera"**

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"tight" or "soft." Its consumption of pulp for paper, board and cellulose continues to rise.

Britain, in just the first quarter of 1955, imported 105,000 tons more of chemical pulps than it did in the first quarter of 1954. Its chemical pulp imports for all of 1954 totalled 1,500,000 tons, so the trend is clear enough for anyone to see.

Some pulp industry observers say the North American industry today is in the position of "holding the balance of power." Others call it a "stabilizing balance wheel." Anyway you want to look at it, the conduct of the North American industry in the world pulp commerce has great capacities for either good or bad influence.

It is significant that while production and shipments from all pulp producing nations are up, inventories at their pulp mills are at a comfortable level, consistent with efficient service. Neither are the customers building up any unusual inventories, in fact their

situation is usually quite the opposite.

BIG UPSWING FOR DISSOLVING PULP—A big upswing in shipments of dissolving pulps must be reckoned as a major factor in the export field. In the first quarter of 1955 there was a sharp upswing of shipments of pulp to rayon-acetate manufacturers in U.S.A. and other nations. The demand was substantially above that of 1954, first quarter. One dissolving pulp manufacturer, exporting 25% of its products, has broken a sales record every quarter for the last five quarters (up to mid-1955).

Worldwide rayon and acetate production was up 8% in 1954, over 1953. World production totalled 2,253,500 tons (usually measured in pounds, 4,507,000,000 lbs.). However, not to be ignored is the rapid rise of non-cellulosic fibers—nylon, orlon, dacron, etc.—due to rise 69% in U.S.A., and 143% in other countries by 1957, over 1954. Total world output was to be 900,600,000 lbs. by 1957 (it was



Scandinavian Pulp for British Paper

The great Scandinavian forests provide much of the woodpulp used in British paper mills. Bowater Organisation of England acquired these two groundwood mills in 1937-38, in recent



years has modernized and re-equipped them. At left is Risør Mills in Norway; at right Sofiehem Mills in Sweden. Both supply groundwood pulp to four Bowater mills in Kent and Cheshire.

From Sweden To America

Hitting a post-war high, Sweden exported 2,058,430 short tons of chemical woodpulp in 1954. Here bleached kraft pulp (Stora 32) is loaded in hold for shipment to U.S., which took 88,000 tons in 1954, up 25% from 1952.



476,000,000 lbs. in 1954). This includes textile glass fiber in U.S.A. figures, but not in foreign.

By 1953—last year available—world per capita use of rayon-acetate (largely made from woodpulp), was 1.5 lbs., exceeding wool, 1 lb., but behind cotton, 6.4. In North America, rayon-acetate use was 7.3 lbs. per capita, to 3.3 of wool, and 26.7 cotton. Silk had long since given up the ghost in this competition.

1955 WILL BE THE BIG YEAR—So it is now "in the bag" that 1955 will be the outstanding year in the history of woodpulp and market woodpulp. The U.S.A., Britain, France and Western Germany stand as Nos. 1, 2, 3, and 4 nations as importers of woodpulp, even though the U.S.A. and Germany are major exporters, too.

The U.S.A.'s exports are an intriguing interest, for they rose to 25% of

the total sales of U.S. pulp mills to its own American mill markets. It appeared at mid-year that U.S.A. exports were leveling off at a monthly average of 55,000 to 60,000 tons. Virtually all woodpulp mills were running full. The same was true of straw and esparto mills, a basic resource for Britain, France and Holland.

WASTE WOOD PERMITS EXPANSION—On the North Pacific Coast of North America, where most woodpulp expansion will be taking place, the experts say the available wood resource has hardly been tapped. Two mills in that area are now running 100% on sawmill and plywood plant left-overs, edgings, shavings, etc., without cutting a single tree! Others are running up to 50% or more on this former "waste wood" and also much good wood that was left in the forest. New pulping processes and techniques make their pulp of high quality, too.

Swedish mills and Canadian mills were continuing to try to introduce the 7-day week to keep up production. Religious scruples prevented this in some provinces of Canada. In Sweden, more mills will be using hardwoods. But at the same time, one big market pulp mill was changing over to newsprint—gradually, over several years.

And so, no one seriously anticipates any significant increase in Swedish market pulp, although it will bleach more pulp. Its supply to the United States may level off or decline further, as it directs more attention to attempting to retain its customers in Europe and elsewhere. The Scandinavian producers, it may be expected, will seek by every means possible to attain the soundest possible market position in Britain, the Continent and Latin America.

The outlook for pulp is very opti-

mistic in late 1955. But there are factors rapidly developing that have never been witnessed before, which should mean that this optimism will not be just another temporary experience. Longterm stability and statesmanship in marketing of woodpulp seems to have arrived, at last.

See PULP & PAPER's Map: Tells Story of World Pulp Flow

Scandinavia's share of world pulp trade—the pulp shipped overseas and across frontiers—still runs around 63%. The North American share is virtually all the rest. It will increase this year.

PULP & PAPER's "WORLD PULP TRADE—MARKET PULP FLOW" map, as usual, is again one of the features of this WORLD REVIEW. You will find it on the next page.

Scandinavia still ships about six times as much pulp to European nations as the Canadian and American pulp marketers together. But nearly 600,000 tons went to Europe from across the Atlantic, and that is what took care of most of the pulp-paper-rayon expansion in Europe, riding on the wings of that continent's phenomenal economic recovery.

Britain, in this article, is described as "the key" to the world pulp situation in 1955. In Europe it is the No. 1. customer of both Scandinavian and North American producers. But half of Scandinavia's exports to other European nations went to Britain, 4% times what was shipped by Canada and U.S.A.

The Scandinavian nations shipped 26,165 short tons to Soviet Russia; 47,813 to Poland and 7,808 to Hungary, Soviet satellites. Part of its 373,000 ton German shipments went to East Germany. None was reported shipped to these countries by Canada or U.S.A.

The Latin American market was dominated by Scandinavia—it shipped about 550,000 tons; U.S.A., 128,000, and Canada 60,000.

For the Far East it was about a standoff—Scandinavia shipped 120,000 tons; U.S. and Canada, about 120,000.

U.S.A. is, by far, Canada's best customer, almost as good as Britain is to Scandinavia. U.S.A.'s best customers are Britain, Canada, West Germany, Argentina, Japan and Mexico. Canada's are U.S.A., Britain, Japan, France and Argentina. Scandinavia's are Britain, France, Germany (East and West), U.S.A., Argentina and Brazil.

World vs. North America

	World	No. America as % of World
1925	13,962	6,735 48.2
1929	18,980	8,884 46.8
1933	17,581	7,256 41.3
1937	26,706	13,834 51.8
1953	39,063	26,326 66.8
1954	41,741	27,721 66.4

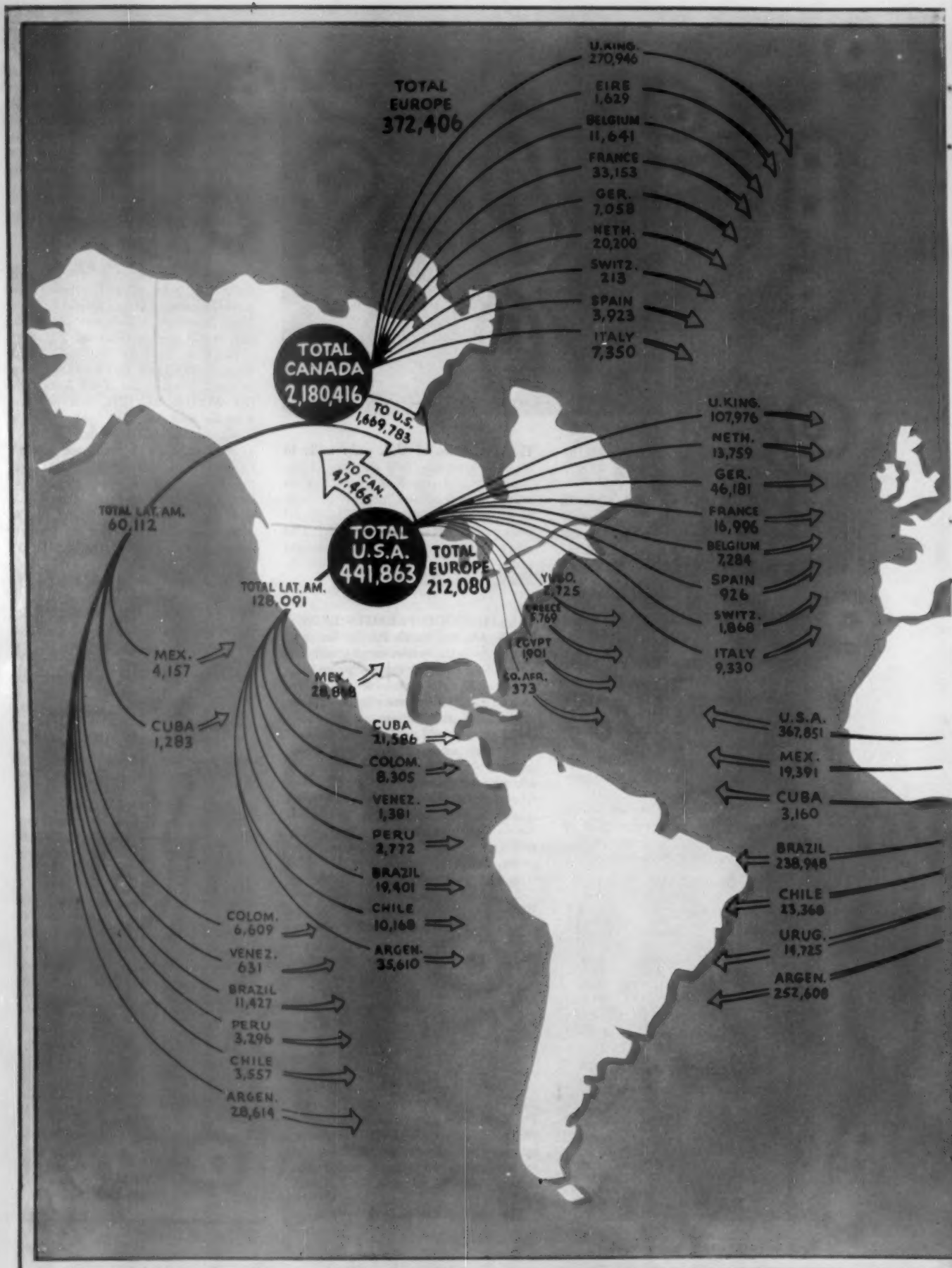
U.S. Pulp Producers Assn. & Can Pulp & Paper Assn.

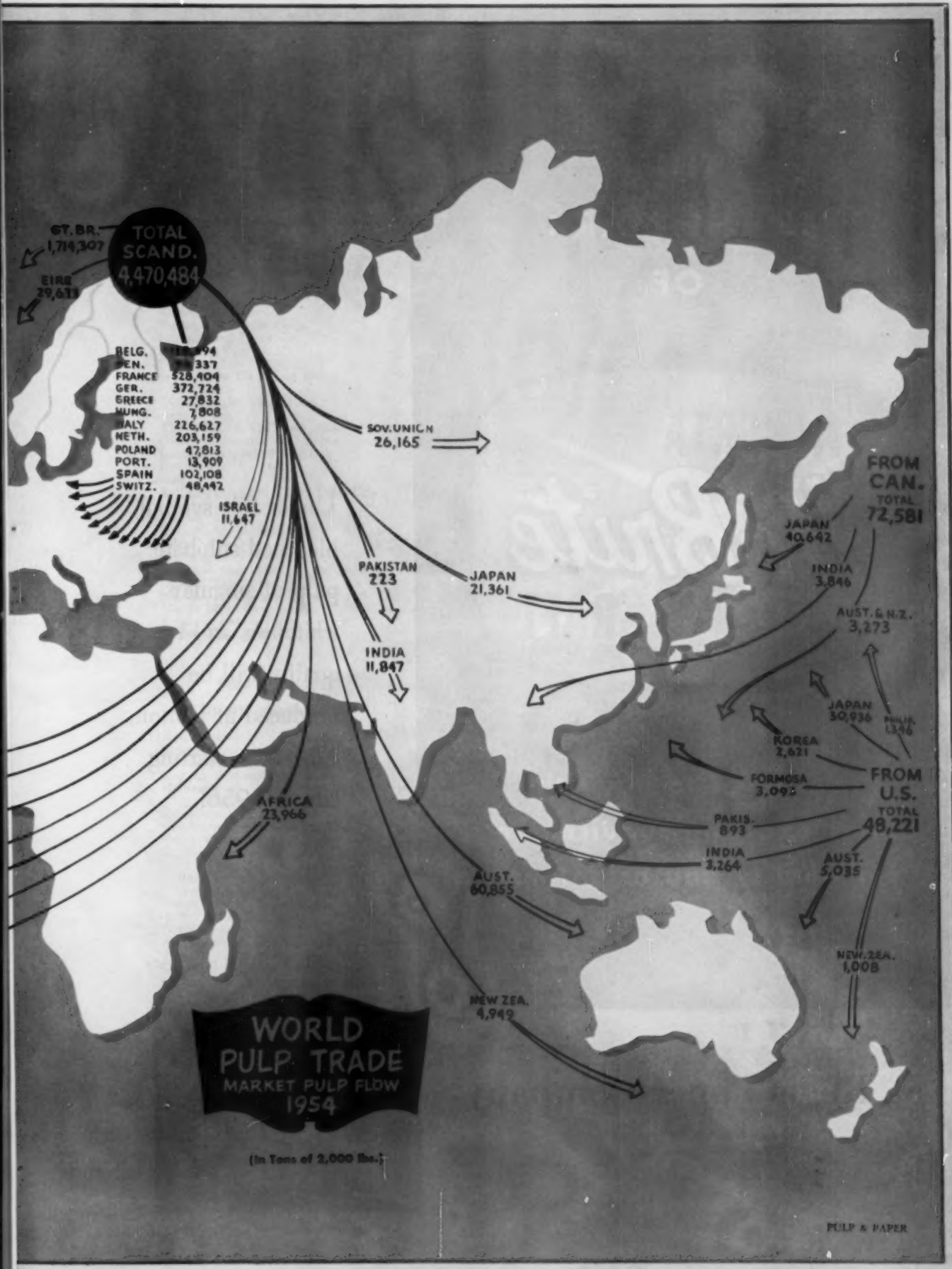
Woodpulp Production Europe vs. North America

Year	Europe (in short tons)	North America
1921	3,300,000	4,400,000
1929	8,700,000	8,700,000
1937	12,500,000	11,500,000
1946	6,200,000	16,900,000
1953	10,550,000	26,320,000
1954	11,570,000	27,720,000

What is Outlook for Dissolving Pulp?

See article by
Rex Vincent
on page 120





PULP & PAPER

THIS
IS THE MARK
OF



... designed to meet the
most exacting requirements
for quality and brightness.

Under this symbol,
bleached sulphate
pulp of singular
whiteness and top
quality will be
produced at Hinton,
Alberta... starting
late in 1956!

St. Regis Paper Company

230 Park Avenue
New York 17, New York



Worldwide Directory by Grades

Information on addresses, trade names, brokers, etc., may be found in the listings by companies which immediately follows this section.

Dissolving and Special**United States**

Brown Company
Buckeye Cellulose Corp.
International Paper Co.
Ketchikan Pulp Co.
Rayonier, Inc.
Scott Paper Co., West Coast
Division
Weyerhaeuser Timber Co.

Canada

Alaska Pine & Cellulose, Ltd.
Canadian International Paper Co.
Columbia Cellulose Co. Ltd.
Restigouche Co. Ltd.

Austria

Kellner-Partington Paper Pulp Co.
Ltd.

Norway

Borregaard, Aktieselskapet

Sweden

Bentförs Sulfittaktiebolag
Billeruds Aktiebolag
Korsnäs Aktiebolag
Mo & Domsjö, Aktiebolag
Stroms Bruks Aktiebolag
Svartviks Aktiebolag
Uddeholms Aktiebolag

Paper Grades**SULFITE, BLEACHED****United States**

Brown Company
Crown Zellerbach Corp.
Eastern Corporation
Hollingsworth & Whitney Div.,
Scott Paper Co.
Ketchikan Pulp Co.
Penobscot Chemical Fibre Co.
Puget Sound Pulp & Timber Co.
St. Regis Paper Co.
Scott Paper Co.,
Hollingsworth & Whitney Div.
West Coast Div.
Weyerhaeuser Timber Co.

Canada

Abitibi Power & Paper Co., Ltd.
Alaska Pine & Cellulose, Ltd.
Alliance Paper Mills, Ltd.
Canadian International Paper Co.
Columbia Cellulose Co. Ltd.
Fraser Companies, Ltd.
Gaspesia Sulphite Co., Ltd.
Howard Smith Paper Mills Ltd.
Irving Pulp & Paper Ltd.
Restigouche Co. Ltd.

Austria

Kellner-Partington Paper Pulp Co.
Ltd.

Finland

Enqvist, J. W. O/Y
Haarlan Selluloosayhtio
Kaukus Fabrik, A/B
Kymmene, A/B
Rauma-Repolä O/Y
Rosenlew, W. and Co., A/B
Serlachius, G. A., O/Y
Yhtyneet Paperitehtaat O/Y

Germany

Zellstofffabrik Waldhof

Norway

Borregaard, Aktieselskapet
Greaser Cellulosefabrik A/S
Krogstad Cellulosefabrik
Aktieselskabet
Mjøndalen Cellulosefabrik
Aktieselskabet
Tofte Cellulosefabrik Aktieselskabet
Toten Cellulosefabrik Aktieselskabet
Vestfos Cellulosefabrik Aktieselskabet

Sweden

Bentförs Sulfittaktiebolag
Billeruds Aktiebolag
Edsvala Bruk, Aktiebolaget
Essviks Aktiebolag
Forshaga Sulfitt Aktiebolag
Iggesunds Bruk, Aktiebolaget
Korsnäs Aktiebolag
Mo & Domsjö, Aktiebolag
Munkedals Aktiebolag
Skonviks Aktiebolag
Stroms Bruks Aktiebolag
Svartviks Aktiebolag
Aktiebolag Tegefors Verk
Uddeholms Aktiebolag
Wikmanshytte Bruks Aktiebolag

SULFITE, UNBLEACHED**United States**

Crown Zellerbach Corp.
Hollingsworth & Whitney Div.,
Scott Paper Co.
Scott Paper Co., Hollingsworth &
Whitney Div.
Spaulding Pulp and Paper Co.

Canada

Abitibi Power & Paper Co., Ltd.
Anglo-Canadian Pulp & Paper Mills,
Ltd.
Bathurst Power & Paper Co., Ltd.
Bowater's Newfoundland Pulp &
Paper Mills, Ltd.
Canadian International Paper Co.
Consolidated Paper Corp., Ltd.
Donnacona Paper Co., Ltd.
Fraser Companies, Ltd.
Gaspesia Sulphite Co., Ltd.
Great Lakes Paper Co., Ltd.
James MacLaren Co., Ltd.
Mersey Paper Co., Ltd.
Ontario Paper Co., Ltd.
Powell River Co., Ltd.
Quebec North Shore Paper Co.
St. Lawrence Corp., Ltd.
St. Raymond Paper, Ltd.

Finland

Aanekoski O/Y
Ahlstrom, A. O/Y
Eklof, Aug., A/B
Enso-Gutzeit O/Y
Jakobstads Cellulosa A/B
Kajaani O/Y
Kemi, O/Y
Nokia O/Y
Serlachius, C. A., O/Y
Toppila, O/Y
Veitsiluoto O/Y
Yhtyneet Paperitehtaat O/Y

Norway

Katfos Fabriker, Aktieselskabet

Sweden

Bergvik och Ala Aktiebolag
Gota Sulfittaktiebolaget
Hellefors Bruks Aktiebolag
Hissmofors Aktiebolag
Hylte Bruks Aktiebolag
Kramfors Aktiebolag
Mackmyra Sulfitt Aktiebolag
Marma Langrörs Aktiebolag
Oskarström Sulphite Mills
Aktiebolag
Stjernfors-Stalldalen Aktiebolaget
Stora Kopparbergs Bergslags A/B
Storviks Sulfitt Aktiebolag
Sunds Aktiebolag
Svano Aktiebolag
Utansjö Cellulosa A.B.
Wifstavarfs Aktiebolag
Yugoslavia
Fabrik Celuloza Prijedor

SULFATE, BLEACHED**United States**

Brunswick Pulp & Paper Co.
Buckeye Cellulose Corp.
Champion Paper & Fibre Co.
Coosa River Newsprint Co.
Crown Zellerbach Corp.
East Texas Pulp and Paper Co.
Gaylord Container Corp.
Halifax Paper Co., Inc.
Hollingsworth & Whitney Div.,
Scott Paper Co.
International Paper Co.
North Carolina Pulp Co.
Oxford Paper Co.
Potlatch Forests, Inc.
Riegel Carolina Corp.
St. Marys Kraft Corp.
Scott Paper Co., Hollingsworth &
Whitney Div.
West Virginia Pulp & Paper Co.
Weyerhaeuser Timber Co.

Canada

Canadian International Paper Co.
Fraser Companies, Ltd.
The KVP Co., Ltd.
MacMillan & Bloedel, Ltd.
Marathon Paper Mills of Canada, Ltd.

Finland

Enso-Gutzeit O/Y

Norway

Hurum Fabriker, Aktieselskabet

Sweden

Forss Aktiebolag
Iggesunds Bruk, Aktiebolaget
Kopparfors Aktiebolag
Korsnäs Aktiebolag
Mo & Domsjö, Aktiebolag
Ostrands Aktiebolag
Stora Kopparbergs Bergslags A/B
Uddeholms Aktiebolag

SULFATE, SEMI-BLEACHED**United States**

Bowaters Southern Paper Corp.
Champion Paper & Fibre Co.
Halifax Paper Co., Inc.
Hollingsworth & Whitney Div.,
Scott Paper Co.

SULFATE, SEMI-BLEACHED

Continued

Scott Paper Co., Hollingsworth & Whitney Div.

Canada

Canadian Forests Products Ltd.
MacMillan & Bloedel, Ltd.

Finland

Oulu O/Y
Sunila O/Y

Sweden

Korsnas Aktiebolag

SULFATE, UNBLEACHED

United States

Chesapeake Corp. of Virginia
Container Corp. of America
Crown Zellerbach Corp.
Gaylord Container Corp.
Halifax Paper Co., Inc.
International Paper Co.
National Container Corp.
North Carolina Pulp Co.
Riegel Carolina Corp.
St. Marys Kraft Corp.
St. Regis Paper Co.
Southland Paper Mills, Inc.
West Virginia Pulp & Paper Co.

Canada

Canada Paper Co.
Canadian Forest Products Ltd.
Canadian International Paper Co.
Consolidated Paper Corp., Ltd.
Dryden Paper Co., Ltd.
Fraser Companies, Ltd.
St. Lawrence Corp., Ltd.

Finland

Enso-Gutzeit O/Y
Joutseno-Pulp O/Y
Kemi, O/Y
Lohja-Kotka, O/Y
Oulu O/Y
Sunila O/Y

Norway

Hurum Fabriker, Aktieselskabet

Sweden

Bergvik och Ala Aktiebolag

Dynas Aktiebolag
Eds Cellulosafabriks Aktiebolag
Fors Aktiebolag
Holmsunds Aktiebolag
Iggesunds Bruk, Aktiebolaget
Kopparfors Aktiebolag
Kramfors Aktiebolag
Marna Langrors A/B
Munksjo, Aktiebolag
Munksunds Aktiebolag
Ostrands Aktiebolag
Sandvikens Cellulosa A. B.
Wifstavarfs Aktiebolag

SODA, BLEACHED

United States

The Mead Corp.
Penobscot Chemical Fibre Co.

Canada

Howard Smith Paper Mills Ltd.

SODA, UNBLEACHED

United States

The Mead Corp.

SEMI-CHEMICAL

Finland

Veitsiluoto O/Y

GROUNDWOOD

United States

American Wood Board Co.
Coconino Pulp & Paper Co., Inc.
Hollingsworth & Whitney Div.,
Scott Paper Co.
Little Rapids Div., Charmin Paper Mills
Oswego Falls Corp.
Scott Paper Co., Hollingsworth & Whitney Div.
Tomahawk Pulp Co.

Canada

John Breakey, Ltd.
Donohue Brothers Ltd.

Fraser Companies, Ltd.
Gair Co., Canada Ltd.
Gulf Pulp & Paper Co.
Halifax Power & Pulp Co., Ltd.
Howard Smith Paper Mills Ltd.
Lake Megantic Pulp Co.
Lotbiniere Pulp & Paper Co., Ltd.
James MacLaren Co., Ltd.
Minas Basin Pulp & Power Co., Ltd.
Mohawk Corp., Ltd.
Provincial Paper Ltd.
Quebec North Shore Paper Co.
Richmond Pulp & Paper Co. of Canada, Ltd.
St. George Pulp & Paper Co., Ltd.
St. Lawrence Corp., Ltd.
St. Raymond Paper, Ltd.
Soucy, Inc., F. F.
Thorold Pulp Co., Ltd.

Finland

Elving, Anton
Stockfors, A/B
Svarta Bruk, O/Y, A/B

Norway

Viul Tresliperi, A/S

Sweden

Bure Aktiebolag
Edsvalla Bruk, Aktiebolaget
Forshaga Sulfit Aktiebolag
Forsse Woodpulp Mill
Hogfors Trasliperi, A/B
Iggesunds Bruk, Aktiebolaget
Kramfors Aktiebolag
Marna Langrors A/B
Munksunds Aktiebolag
Rottneros Bruk, Aktiebolaget
Scharins-Soner Aktiebolaget

BAGASSE

United States

Valentine Pulp & Paper Co., Inc.

ESPARTO, BLEACHED

France

L'Alfa S. A.

STRAW, BLEACHED

Holland

N. V. Stroostofffabriek "Phoenix"



BLEACHED AND UNBLEACHED SULPHATE

WEST VIRGINIA PULP and PAPER COMPANY

PULP SALES DEPARTMENT

230 PARK AVENUE

NEW YORK 17, NEW YORK

*PUGET PULP—the whitest, cleanest, bleached sulphite pulp
that we can make is produced particularly for the market.
To assure converting mills of top quality, Puget management
is always testing new processes, always alert to improved
methods, always ready to install new designs in equipment.
Gear your operations to PUGET PULP.*



PUGET SOUND

PULP AND TIMBER COMPANY

BELLINGHAM • WASHINGTON

World Producers of Market Pulp

Compiled especially by PULP & PAPER magazine. Listings following company names and addresses give type of pulp and brand names. All grades are softwood unless otherwise specified.

UNITED STATES

American Wood Board Co.
Schuylerville, New York
Groundwood
Standard, unbleached

Bowaters Southern Paper Corp.
Mill at: Calhoun, Tenn.
Sales: The Bowater Paper Co., Inc.
250 Park Ave., New York 17, N.Y.
Sulfate semi-bleached

Brown Company
General Sales Office:
150 Causeway St., Boston 14, Mass.
Branch Offices:
500 Fifth Ave., New York 36, N.Y.
110 S. Dearborn St., Chicago 3, Ill.
681 Market St., San Francisco, Calif.
Mill at: Berlin, N.H.
Sulfite bleached
Softwood and hardwood
Dissolving and related grades
Special grades
Screenings
Sulfite—Sulfate
Brands:
Solka Alpha V; Solka Photographic; Solka Soft Alpha; Solka Dur Sylvan; Solka Dur Natus; Solka Special Dur Alba

Brunswick Pulp & Paper Co.
Mill at: Brunswick, Georgia
Agent: Mead Pulp Sales, Inc.
Sulfate, bleached
Grade—Pine hardwood
Brand: Brunswick

Buckeye Cellulose Corp.
Foley, Florida
Agents: The Buckeye Cotton Oil Co.
(dissolving pulp only)
Bulkley, Dunton Pulp Co., Inc.
(bleached sulfate only)
Dissolving
Sulfate, bleached

Champion Paper & Fibre Co.
Executive Office: Hamilton, Ohio
Mills at:
Canton, North Carolina
Pasadena, Texas
Agent: Castle & Overton, Inc.
Sulfate, bleached
Semi-bleached
Bleached-hardwood

Chesapeake Corp. of Virginia
West Point, Virginia
Agents: Castle & Overton, Inc.
Cellulose Sales Co., Inc.
Parsons & Whittemore, Inc.
Woodpulp, Inc.
(Prime Quality Kraft)
Sulfate, unbleached
Standard grades
Brand: Chesapeake

Coconino Pulp & Paper Co. Inc.
Flagstaff, Arizona
Agents: Gottesman & Co., Inc.
Central Natl. Corp. (for export)
Dry unbleached groundwood

Coosa River Newsprint Co.
Coosa Pines, Alabama
Agent: Bulkley, Dunton Pulp Co., Inc.
Sulfate, bleached

Container Corp. of America
Main Office:
38 S. Dearborn St., Chicago 3, Ill.
Mill at: Fernandina, Florida
Agents: Gottesman & Co., Inc.
Central Natl. Corp. (for export)
Sulfate, unbleached
Special grades
Brand: Conus

Crown Zellerbach Corp.
Executive office:
343 Sansome St., San Francisco 19, Calif.
Mills at: Camas, Washington
Port Townsend, Washington
Sulfite, bleached, unbleached
Sulfate, bleached, unbleached

East Texas Pulp and Paper Co.
Evadale, Texas
Sulfate, bleached
Softwood and Hardwood
Brand: Eastex

Eastern Corporation
Executive office:
Bangor, Maine
Mills at:
Lincoln, Maine
South Brewer, Maine
Agents: Gottesman & Co., Inc.
Central Natl. Corp. (for export)
Sulfite, bleached
Special grades
Standard grades
Standard grades—hardwood
Brand: Purocell

Gaylord Container Corp.
Executive office:
111 North Fourth St., St. Louis 2, Mo.
Mill at: Bogalusa, La.
Agents: Gottesman & Co., Inc.
Central Natl. Corp. (for export)
Sulfate, bleached
Standard grades
Sulfate, unbleached
Standard grades
Special grades
Brands: Bogalusa; Black Kraft

Halifax Paper Co., Inc.
Roanoke Rapids, N. C.
Sulfate, bleached
Partially bleached
Sulfate, unbleached
Standard grades
Standard grades—hardwood
Brand: Halifax

Hollingsworth & Whitney Div., Scott Paper Co.
Front and Market Sts., Chester, Pa.
Mills at:
Madison, Maine (Groundwood)
Mobile, Alabama (Sulfate)
Winslow, Maine (Sulfite)
Groundwood
Special grades—bleached
Special grades—unbleached

Sulfate
Semi-bleached
Bleached
Sulfite
Unbleached
Semi-bleached
Bleached

International Paper Co.
Executive Office:
220 E. 42nd St., New York 17, N.Y.
Mills at:
Natchez, Miss.
Spring Hill, La.
Agents: Gottesman & Co. Inc.
(Paper grades)
Riordon Sales Corp. (Dissolving grades only)
Sulfate, bleached
Dissolving and paper grades
Sulfate, unbleached
Paper Grade
Brands: Supercell; Tenacell; Novocell

Ketchikan Pulp Co.
Ketchikan, Ward Cove, Alaska
Agent: Bulkley, Dunton Pulp Co., Inc.
Sulfite
Bleached
Dissolving

Little Rapids Division
Charmin Paper Mills
De Pere, Wisconsin
Groundwood
Standard grades
Bleached and unbleached

The Mead Corp.
Mill at:
Kingsport, Tennessee
Agent: Mead Pulp Sales, Inc.
Soda
Bleached
Unbleached
Brand: Mead

National Container Corp.
Executive office: 7 Central Park West, New York, N. Y.
Mills at:
Jacksonville, Florida
Big Island, Virginia
Jaite, Ohio
Reading, Pennsylvania
Tomahawk, Wisconsin
Valdosta, Georgia
Sulfate, unbleached
Standard grades

North Carolina Pulp Co.
Mill at: Plymouth, N. C.
Branch office:
Box 710, Camden 1, N. J.
Sulfate, bleached
Standard grades
Sulfate, unbleached
Board grades

Oswego Falls Corp.
Fulton, New York
Groundwood
Standard unbleached, bleached



MEAD PULP SALES, INC. • Distributors of Wood Pulp

BLEACHED AND UNBLEACHED CHEMICAL AND MECHANICAL WOOD PULP

118 West First Street, Dayton 2 • 230 Park Avenue, New York 17 • 20 North Wacker Drive, Chicago 6



Paul Bunyan always carried with him a perforated stopper for his canteen so that he could quickly convert it into a sprinkling can in case of fire.

This is the eighty-second incident from the fabulous life of Paul Bunyan. Reproductions are available on request.

Oxford Paper Co.

Executive office:
230 Park Ave., New York 17, N.Y.
Mill at: Rumford, Maine
Agents: Acer & Company
Bulkley, Dunton Pulp Co.
Gottesman & Co., Inc.
Mead Pulp Sales, Inc.
Parsons & Whittemore, Inc.
and Lyddon & Co. (America) Inc.,
(for export)
Sulfate, bleached
Standard grades—hardwood
Brand: Harbrite

Penobscot Chemical Fibre Co.

Executive office:
211 Congress St., Boston, Mass.
Mills at: Great Works, Maine
Sulfite, bleached
Standard grades
Soda
Bleached
Brand: Penobscot

Potlatch Forests, Inc.

Lewiston, Idaho
Agent: Bulkley, Dunton Pulp Co.,
Inc.
Sulfate, bleached

Puget Sound Pulp & Timber Co.

Bellingham, Washington
Agent: Bulkley, Dunton Pulp Co.
Sulfite, bleached

Rayonier Inc.

Executive & Sales office: 161 E. 42nd
St., New York 17, N. Y.
Mills at:
Fernandina, Florida
Hoquiam, Washington
Port Angeles, Washington
Shelton, Washington
Jesup, Georgia

Riegel Carolina Corp.

Executive office: 260 Madison Ave.,
New York, N. Y.
Mill at:
Acme, North Carolina
Agents: Bulkley, Dunton Pulp Co.
Gottesman & Co., Inc.
Sulfate, bleached
Special grades
Standard grades
Standard grades—hardwood
Sulfate, unbleached
Standard grades
Brands: Super-Albacel; Albacel;
Astracel

St. Marys Kraft Corp.

St. Marys, Georgia
Agents: Gilman Paper Co.
Sulfate
Bleached
Unbleached
Bleached, high brightness
grades
Gottesman & Co., Inc.
Central National Corp. (for export)
Sulfate, bleached only

St. Regis Paper Co.

Executive office:
230 Park Ave., New York 17, N.Y.

Mill at: Tacoma, Washington

Sole Agents: St. Regis Sales Corp.
Sulfite, bleached
Standard grades
Sulfate, unbleached
Standard grades
Brand: Tacoma

Scott Paper Co.

West Coast Division
Everett, Washington
Manager of Pulp Sales
R. M. Heath
Scott Paper Co.
Chester, Pa.
Sulfite, bleached
(Dissolving and related
grades)
Standard grades
Screenings
Brand: Soundview

Southland Paper Mills, Inc.

Lufkin, Texas
Agent: Perkins-Goodwin Co.
Sulfate, unbleached
Standard grades

Spatlding Pulp and Paper Co.

Newberg, Oregon
Agent: Perkins-Goodwin Co.
Sulfite, unbleached
Standard grades

Tomahawk Pulp Co.

Tomahawk, Wisconsin
Branch office:
115 S. Superior St., Appleton, Wis.
Groundwood
Fine tissue grades
Toweling, and free board
Grades to specifications

Valentine Pulp & Paper Co. Inc.

Lockport, Louisiana
Agent: Perkins-Goodwin Co.
Paper grades

West Virginia Pulp & Paper Co.

Executive office:
230 Park Ave., New York 17, N.Y.
Mills at: Mechanicville, N. Y.
Tyrone, Pa.
Williamsburg, Pa.
Luke, Maryland
Covington, Virginia
Charleston, S. C.
Sulfate
Bleached
Unbleached

Weyerhaeuser Timber Co., Pulp Div.

Sales office:
230 Park Ave., New York 17, N.Y.
Branches:
Bank Bldg., Clinton, Mass.
400 W. Madison St., Chicago 6, Ill.
681 Market St., San Francisco,
Calif.
Mills at: Everett, Washington
Longview, Washington
Sulfite, bleached
Dissolving and related grades
Papermaking grades
Sulfate, bleached
Papermaking grades

CANADA

Abitibi Power & Paper Co., Ltd.

408 University Ave., Toronto 2, Ont.
Mills at: Sault Ste. Marie, Ont.
Smooth Rock Falls, Ont.
Agent: Mead Pulp Sales, Inc.
Sulfite, bleached
Sulfite, unbleached
Screenings
Sulfite
Side Run News
Brand: Abitibi

Alaska Pine & Cellulose, Ltd.

1111 W. Georgia St., Vancouver 5,
B. C.
Mills at: Port Alice, B.C.
Woodfibre, B.C.
Agent: United States—Mead Pulp
Sales, Inc. (for bleached sulfite
paper grades only)
Sulfite, bleached
Paper and dissolving grades
Brand: Alaska Pine & Cellulose

Alliance Paper Mills, Ltd.

407 McGill St., Montreal 1, Que.
Mill at: Merriton, Ont.
Agent: Howard Smith Paper Mills,
Ltd. (Pulp Sales Dept.)
Sulfite, bleached
Special grades
Glassine
Tissue
Brand: Alliance

Anglo-Canadian Pulp & Paper Mills, Ltd.

10-16 Blvd. des Capucins, Quebec
Agent: Northeastern Paper Prod-
ucts, Ltd.
Sulfite, unbleached
Strong
Screenings
Sulfite and groundwood
Brand: Anglocan

Anglo-Newfoundland Development Co. Ltd.

Grand Falls, Newfoundland

Bathurst Power & Paper Co., Ltd.

Head Office: Bathurst, N. B.
Exec. Offices: 1661 Sun Life Bldg.,
Montreal 2, Que.
Mill at: Bathurst, New Brunswick
Agents: Acer & Co., Inc.
Acer McLernon, Inc. (Montreal)
Sulfite, unbleached
Standard grades
Standard grades—hardwood
Brand: Bathurst

Bowater's Newfoundland Pulp & Paper Mills, Ltd.

Corner Brook, Newfoundland
Agent: The Bowater Paper Co., Inc.
Sulfite, unbleached
Standard grades
News

John Breakey, Limited

Breakeyville, Que.
Agents: Pulp & Paper Trading Co.
Woodpulp, Inc.
Groundwood

Canada Paper Co.

407 McGill St., Montreal 1, Que.
Mill at: Windsor Mills, Que.
Agent: Howard Smith Paper Mills,
Ltd. (Pulp Sales Dept.)

a new
standard
of quality
in

PULP

laboratory
controlled
for

★ Extra Cleanliness

★ Extra Brightness

★ Extra Strength



EAST TEXAS

Pulp and Paper Company

Evadele, Texas

General Sales Office:
Telephone Silsbee, Texas
Evergreen 5-3711

Eastern Sales Office:
122 East 42nd Street
New York City
Telephone OXford 7-2920

Western Sales Office:
1003 Builders Bldg.
Chicago, Illinois
Telephone RAndolph 6-1068

Sulfate, unbleached
Special Condenser
Brand: Windsor

Canadian Forest Products Ltd.
Howe Sound Pulp Division
Executive Office: 999 W. Pender St.,
Vancouver 1, B.C.
Mill at: Port Mellon, B.C.
Agent: Perkins-Goodwin Co.
Sulfate
Semi-bleached, unbleached

Canadian International Paper Co.
Sun Life Bldg., Montreal 2, Que.
Mills at: Calumet, Que.
Hawkesbury, Ont.
Gatineau, Que.
LaTuque, Que.
Temiskaming, Que.
Trois Rivières, Que.
Sold by: **Riordon Sales Corp., Ltd.**
Sulfite, bleached
Dissolving and paper grades
Sulfite, unbleached
Paper grade

Manufacturers in Canada
of high quality Woodpulp

STORMONT grade Bleached Sulphite
SEAGULL grade Bleached Sodapulp
made at Cornwall, Ont.

♦
CRABTREE grade Groundwood
made at Crabtree, Que.

♦
ALLIANCE Glassine grade Bleached Sulphite
made at Merritton, Ont.

♦
DONNACONA grade Unbleached Sulphite
made at Donnacona, Que.

♦
WINDSOR grade Unbleached Kraft
made at Windsor Mills, Que.

Sold and distributed by

Pulp Sales Department
Howard Smith Paper Mills Limited

407 McGill Street

Montreal, Que.

Screenings
Sulfite
Sulfate
High Alpha, bleached and un-
bleached, for specialty papers
Brands: Novocell; Tenacell; Film-
cell; Acetacell; Photocell; Plasti-
cell

Columbia Cellulose Co. Ltd.
2035 Guy Street, Montreal 25, Que.
Mill at Prince Rupert, B. C.
Sulfite, bleached
Paper and dissolving grades

Consolidated Paper Corp., Ltd.
Sales office:
Consolidated Paper Sales, Ltd.
Sun Life Bldg., Montreal, Que.
Mills at:
Port Alfred, Que.
Grand Mere, Que.
Cap de la Madeleine, Que.
Shawinigan Falls, Que.
Three Rivers, Que.
Distributor: **Castle & Overton, Inc.**
Sulfite, unbleached
Standard grades
Sulfate, unbleached
Special grades
Standard grades
Brands: Laurentide; Port Alfred;
Wayagamack

Donnacona Paper Co., Ltd.
407 McGill Street, Montreal, Que.
Mill at Donnacona, Que.
Agent: **Howard Smith Paper Mills**
Ltd.,
Pulp Sales Dept.
Sulfite
Standard unbleached
Brand: Donnacona

Donohue Brothers Ltd.
Clermont, Que.
Groundwood
Standard unbleached
Brand: Murray Bay
(All sold under long term con-
tracts)

Dryden Paper Co., Ltd.
Dryden, Ontario
Agents: **Acer & Co., Inc.**
Acer McLernon, Inc. (Montreal)
Sulfate, unbleached
Standard grades
Brand: Dryden

Fraser Companies, Ltd.
Sales office:
1010 St. Catherine St. W.
Montreal 2, Que.
Mills at: Edmundston, N. B.
Newcastle, N. B.
General offices: Edmundston, N. B.
Sulfite, bleached
Standard grades
Sulfite, unbleached
Standard grades
Groundwood
Standard unbleached
Sulfate, bleached
Standard grades
Sulfate, unbleached
Standard grades

Gair Co., Canada Ltd.
111 Richmond St. West, Toronto
1, Ont.
Mills at:
Campbellford, Ont.
Frankford, Ontario
Groundwood

HOWE SOUND PULP

**Division of
CANADIAN FOREST PRODUCTS LTD.**

Head Office: 999 West Pender Street

VANCOUVER, B.C.

Mill at Port Mellon, B.C.



**Producers of High Grade
Semi-Bleached, Unbleached, and Specialty
SULPHATE PULPS**

**Sales Agents:
PERKINS-GOODWIN CO.**

589 Fifth Avenue

NEW YORK

PULP & PAPER

WORLD MARKET PULP DIRECTORY

Producers

Standard unbleached
Brand: Gair

Gaspesia Sulphite Co., Ltd.
Main Office: P.O. Box 1487, Quebec, Que.
Mill at: Chandler, Que.
Agents:
Canada and U. S.: Montmorency Paper Co., Inc.
Overseas: Northeastern Paper Products, Ltd.
Sulfite, bleached
Sulfite, unbleached, strong unbleached, easy bleaching
Screenings, sulfite
Brand: Gaspesia

Great Lakes Paper Co., Ltd.
P.O. Box 430, Fort William, Ont.
Agent: Great Lakes Canadian, Inc.
332 South Michigan Ave., Chicago, Ill.
Sulfite, unbleached
Standard grades
Sulfite, unbleached glassine
Screenings, sulfite
Brand: Great Lakes

Gulf Pulp & Paper Co.
65 St. Anne St., Quebec, Que.
Mill at: Clarke City, Que.
Agent: Price & Pierce, Ltd.
Groundwood—pressed wet
Special unbleached
Standard unbleached
Screenings
Brand: Gulf

Halifax Power & Pulp Co., Ltd.
Sheet Harbour, Nova Scotia
Gen. Mgr.: E. D. Hyndman
Agents: Gottesman & Co., Inc.
Central National Corp. (for export)
Groundwood
Standard unbleached

Howard Smith Paper Mills Ltd.
407 McGill St., Montreal 1, Que.
Mills at: Cornwall, Ont.
Crabtree Mills, Que.
Agent: Howard Smith Paper Mills Ltd. (Pulp Sales Dept.)
Sulfite, bleached
Standard grades

Soda
Bleached
Groundwood
Standard unbleached
Brands: Crabtree; Seagull; Stormont

Irving Pulp & Paper Ltd.
P.O. Box 280, Lancaster, N. B.
Agents: Bulkley, Dunton Pulp Co.
Sulfite, bleached
Prime grades
Brand: Saint John

The KVP Co., Ltd.
Espanola, Ontario
Sales Office: 200 Bay St., Toronto, Ont.
Sulfate, bleached

Lake Megantic Pulp Co.
Lake Megantic, Quebec
Agent: Woodpulp, Inc.
Groundwood—unbleached (moist)
Board and tissue
Brand: Lake Megantic

Lotbiniere Pulp & Paper Co., Ltd.
Danville, Que.
Mill at: Nicolet Falls, Que.
Agents: Lyddon & Co. (America) Inc.
Parsons & Whittemore, Inc.
Groundwood—unbleached (moist)
Standard grades—tissue and board
Brand: Lotbiniere

James Maclaren Co., Ltd.
Buckingham, Que.
Agents: Gottesman & Co., Inc.
Central Nat'l. Corp. (for export)
Sulfite, unbleached
Standard grades
Groundwood

MacMillan & Bloedel, Ltd.
837 W. Hastings St., Vancouver, B.C.
Mill at: Port Alberni, B.C.
Agent: Mead Pulp Sales, Inc.
Sulfate, unbleached
Grades: Standard—strong; "A"—bleachable
Brand: Bloedel

Mill at Nanaimo, B.C.
Agent: Price & Pierce, Ltd.
Sulfate—bleached and semi-bleached
Special and standard grades
Brand: Harmac

Marathon Paper Mills of Canada, Ltd.
Sales office:
Marathon Corp., Rothschild, Wis.
Mill at: Marathon, Ontario
Bleached sulfate
Bleached hardwood sulfate

Mersey Paper Co., Ltd.
Liverpool, Nova Scotia
Agent: Price & Pierce, Ltd.
Sulfite
Standard unbleached
Pulping—Side Run News
Brand: Mersey

Minas Basin Pulp & Power Co. Ltd.
Hantsport, Nova Scotia
Agent: Price & Pierce, Ltd.
Groundwood
Special unbleached
Standard unbleached
Brand: Minas Basin

Mohawk Corp., Ltd.
P.O. Box 408, Riviere du Loup, Que.
Mill at: Riviere du Loup
Agents: Gottesman & Co. Inc.
Central Natl. Corp. (for export)
Groundwood
Standard unbleached

Ontario Paper Co., Ltd.
Thorold, Ontario
Agents: Bulkley, Dunton Pulp Co., Inc.
Lyddon & Co. (America) Inc.
J. J. Nolan
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Woodpulp, Inc.
Sulfite, unbleached
Special grades—glassine
Standard grades
Brand: Ontario

Powell River Co., Ltd.
Standard Bldg., Vancouver, B.C.
Sales office:
Powell River Sales Co., Ltd.
Standard Bank Bldg., Vancouver, B.C.
U. S. Sales office:
Powell River Sales Corp.
400 Madison Ave., New York, N.Y.
Mill at: Powell River, B.C.

WOOD PULP

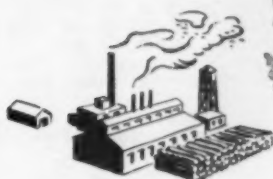
ALL GRADES

ACER McLERNON INCORPORATED

CANADA CEMENT BUILDING

MONTREAL

Looking AHEAD with CANADA



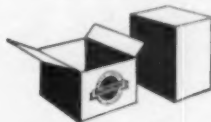
1915

Entered the pulp field



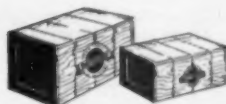
1931

First Canadian mill to make Fourdrinier Kraft liner and Kraft corrugating material



1945

Began manufacture of corrugated containers



TODAY

Enters field of making Wire bound Boxes



KEEPING AN ALERT LOOKOUT to the future is a policy which well befits a forward looking organization such as Bathurst. This policy has helped keep the Bathurst ship on a steady forward course through ever changing economic conditions.

Foresight led the Bathurst company into the pulp and paper field exactly forty years ago. Faith in the future led to Bathurst pioneering in 1931 the production of Kraft liner in Canada. Recognition of Canada's industrial development prompted Bathurst to enter the container

manufacturing field at the close of the Second World War through the purchase of Shipping Containers and Kraft Containers. Now, with the recent acquisition of Canadian Wirebound Boxes, another major step forward has been achieved.

Today still looking to the future, Bathurst has streamlined its services for the benefit of its customers. Henceforth its five plants, strategically located in different parts of the country, will be represented by one sales organization with sales offices at key points.

Now one organization at your service from FOREST TO PACKAGE.



SALES OFFICES AT:

1000 GERRARD ST. E.,
TORONTO, ONT.

CAVELL AVE.,
HAMILTON, ONT.

1035 HODGE ST.,
ST. LAURENT, QUE.

POWER & PAPER COMPANY LIMITED

MILLS AT BATHURST, N.B. CONTAINER PLANTS AT:

HAMILTON, ONT.

TORONTO, ONT.

ST. LAURENT, QUE.

MONTREAL, QUE.

Producers

Sulfite, unbleached
Standard grades
Brand: Powell River

Provincial Paper Ltd.

388 University Ave., Toronto, Ont.
Mill at: Port Arthur, Ontario
Agent: Mead Pulp Sales Inc.
Groundwood
Standard unbleached
Screenings
Sulfite
Brand: Provincial

Quebec North Shore Paper Co.

Head office:
680 Sherbrooke St. W., Montreal,
Que.
Sales office:
Ontario Paper Co., Ltd., Thorold,
Ontario
Mill at: Baie Comeau, Que.
Agents: Bulkley, Dunton Pulp Co.,
Inc.
Lyddon & Co. (America) Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Sulfite, unbleached
Special grades
Standard grades
Groundwood
Standard unbleached

Restigouche Co. Ltd.

c/o Fraser Companies, Ltd.
1010 St. Catherine St. W.,
Montreal 2, Que.
Mill at: Atholville, N. B.
Sulfite, bleached
Dissolving and related grades
Standard grades
Screenings
Sulfite
Brands: Restigouche; Restophane;
Resticose

Richmond Pulp & Paper Co. of Canada, Ltd.

Bromptonville, Que.
Agent: Price & Pierce, Ltd.
Groundwood
Standard unbleached
Brand: Bromptonville

St. George Pulp & Paper Co., Ltd.

Mill at: St. George, N. B.
P.O. Box 847, St. John, N. B.
Agents: Bulkley, Dunton Pulp Co.
Lyddon & Co. (America) Inc.
Mead Pulp Sales, Inc.
Parsons & Whittemore, Inc.
Pulp & Paper Trading Co.
Woodpulp, Inc.
Groundwood
Bleached
Unbleached
Brand: Fibrewhite

St. Lawrence Corp., Ltd.

Sales office:
St. Lawrence Sales Co., Ltd.
Sun Life Bldg., Montreal, Que.
Mills at:
Doibeau, Que.
East Angus, Que.
Nipigon, Ont.
Red Rock, Ont.
Three Rivers, Que.

Agents: Gottesman & Co., Inc.
Central Natl. Corp. (for export)
Sulfite, unbleached
Standard grades
Bleachable grades
Sulfate, unbleached
Standard grades
Groundwood
Standard unbleached

St. Raymond Paper, Ltd.

1510 Drummond St., Montreal 25,
Que.
Mills at:
Desbiens, Que.
St. Raymond, Que.
Agent: St. Raymond Sales Ltd.
1510 Drummond St., Montreal, Que.
Sulfite, unbleached
Special grades
Standard grades
Groundwood
Standard unbleached
Screenings
Sulfite
Brand: St. Raymond

Soucy, Inc., F. F.

Chemin du Lac, Co. Temiscouata,
Que.
Agent: Bulkley, Dunton Pulp Co.
Groundwood
Standard unbleached
Brand: Soucy, Snow Flake

Thorold Pulp Co., Ltd.

Front Street
Thorold, Ontario
Groundwood
Standard unbleached

FINLAND

Aanekoski O/Y

Aanekoski
Representative: Pulp Sales Corp.
Sulfite, unbleached
Special grades—softwood
Brand: Aanekoski (Blue) Strong;
also second quality

Ahlstrom, A. O/Y

Warkaus
Representative: Pulp Sales Corp.
Sulfite, unbleached
Special grades
Brands: Ahlstrom (Blue) Strong;
Ahlstrom BL Bleachable; Ahl-
strom EB Easy Bleaching

Eklof, Aug., A/B

Borga
Representative: Pulp Sales Corp.
Sulfite, unbleached
Special grades
Standard grades
Brands: Eklof (Green) Extra
Strong; Eklof (Blue) Strong;
Eklof BL Bleachable; also
semi-prime, second and third
qualities, and screenings

Elving, Anton (Siuro)

Siuro
Representative: Pulp Sales Corp.
Groundwood (In Thin Sheets)

Special unbleached—hardwood
Standard unbleached
Brand: Siuro

Enqvist, J. W. O/Y, (Sphinx)

Lielahiti
Representative: Pulp Sales Corp.
Sulfite, bleached
Special grades
Standard grades
Brands: Sphinx (Red) for Rayon;
Sphinx (Red) Extra Soft;
Sphinx (Black) Soft; Sphinx
(Blue) Strong; also semi-
prime, second and third quali-
ties and screenings.

Enso-Gutzeit O Y (Tornator, Seal, Gutzeit)

Kaukopaa
Kotka
Tainionkoski
Representative: Pulp Sales Corp.
Sulfate, unbleached
Special grades
Standard grades
Brands: Tornator (Seal) (Green)
Extra Strong; Tornator (Seal)
Strong; Tornator (Seal) L&S
Light & Strong; Gutzeit
(Blue) Strong; also second
qualities
Sulfate, bleached
Brand: Tornator (Seal) Bleached
Sulfite, unbleached
Special grades
Brands: Tornator (Glassine);
Tornator (Green) Extra
Strong; Tornator (Blue)
Strong; Tornator BL Bleach-
able; Tornator EB Easy Bleach-
ing

Haarlan Selluloosayhtio

Lievestuore
Representative: Pulp Sales Corp.
Sulfite, bleached
Special grades
Standard grades — softwood,
hardwood
Brands: Haarla (Green) Extra
Strong; Haarla (Blue) Strong;
Haarla (Black) Soft; Haarla
(Green) Glassine; Haarla As-
pen (hardwood); Haarla Birch
(hardwood)

Jakobstads Cellulosa A/B

Jakobstad
Representative: Pulp Sales Corp.
Sulfite, unbleached
Special grades
Standard grades
Brands: Jakobstad (Green) Extra
Strong; Jakobstad (Blue) Strong

Joutseno-Pulp O/Y

Joutseno
Representative: Pulp Sales Corp.
Sulfate, unbleached
Special grades
Standard grades
Brands: JssP (Green) Extra
Strong; JssP (Blue) Strong;
also second qualities

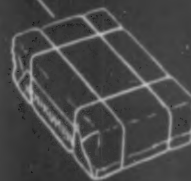
Kajaani O/Y

Kajaani
Representative: Pulp Sales Corp.
Sulfite, unbleached
Special grades
Brands: Kajaani BL Bleachable;
Kajaani EB Easy Bleaching;
also semi-prime qualities and
dry screenings



SOUNDVIEW

BLEACHED SULPHITE PULP



Scott Paper Company



West Coast Division - Everett, Washington

Kaukas Fabrik, A/B

Kaukas
Representative: Pulp Sales Corp.
Sulfite, bleached
Special grades
Standard grades
Brands: KF One Crown; Two Crown; Three Crown; Four Crown for viscose; KF One A; Two A for Acetate; KF (Blue) Strong; KF (Black) Soft; KF (Red) Extra Soft; also second and third qualities

Kemi, O/Y

Kemi
Representative: Pulp Sales Corp.
Sulfite unbleached
Special grades
Standard grades
Brands: Kemi (Green) Extra Strong; Kemi (Blue) Strong; Kemi BL Bleachable; also semi-prime, second qualities and dry screenings
Sulfate, unbleached
Special grades
Standard grades
Brands: Kemi (Blue) Strong; Kemi W; Kemi Con Condenser; also second qualities

Kymmene, A/B

Kuusankoski
Representative: Pulp Sales Corp.
Sulfite, bleached
Special grades
Standard grades
Brands: Kuusankoski (Green) Extra Strong Bond; Kuusankoski (Blue) Strong

Lohja-Kotka, O/Y

Lohja
Representative: Pulp Sales Corp.
Sulfate, unbleached
Special grades
Brand: Lohja (Blue) Strong

Nokia O/Y

Nokia
Representative: Pulp Sales Corp.
Sulfite, unbleached
Special grades
Standard grades
Brands: Nokia (Green) Extra Strong; Nokia (Blue) Strong; Nokia BL Bleachable

Oulu O/Y

Oulu
Representative: Pulp Sales Corp.
Sulfate, unbleached
Special grades
Standard grades
Brands: Oulu (Green) Extra Strong; Oulu (Blue) Strong; Oulu L&S Light and Strong; also second qualities
Sulfate, semi-bleached
Brands: Oulu Polaris 65, 70

Rauma-Repola O/Y

Rauma
Representative: Pulp Sales Corp.
Sulfite, bleached (new process)
Special grades

Brands: Rauma R, RR, RRR, for Rayon; Rauma (Black) Soft; Rauma (Blue) Strong; also semi-prime and second qualities

Rosenlew, W. and Co., A/B

Bjorneborg
Representative: Pulp Sales Corp.
Sulfite, bleached
Special grades
Standard grades
Brands: Rosenlew VR, VS, J, VV, Alpha; Rosenlew R, RR, RRR for Rayon, F for photo; Rosenlew (Red) Extra Soft; Rosenlew (Black) Soft; Rosenlew (Blue) Strong; also semi-prime qualities

Serlachius, G. A., O/Y

Mannita
Representative: Pulp Sales Corp.
Sulfite, bleached
Special grades
Standard grades
Brands: G.S. (Blue) Strong; G.S. (Green) Extra Strong; G.S. (Green) G Extra Strong Glassine
Sulfite, unbleached
Special grades
Standard grades
Brands: G.A.S. (Blue) Strong

Stockfors, A/B

Lovisa
Representative: Pulp Sales Corp.
Groundwood (in thin sheets)
Standard unbleached
Brand: Stockfors

Sunila O/Y

Sunila
Representative: Pulp Sales Corp.
Sulfate, unbleached
Special grades
Standard grades
Brands: Sunila (Green) Extra Strong; Sunila (Blue) Strong; Sunila 400; Sunila L&S Light and Strong
Sulfate, semi-bleached
Brand: Sunila (Semi-T)

Svarta Bruk, O/Y, A/B

Svarta
Representative: Pulp Sales Corp.
Groundwood (in thin sheets)
Standard unbleached
Brand: Svarta

Toppila, O/Y

Oulu-Uleaborg
Representative: Pulp Sales Corp.
Sulfite, unbleached
Standard grades — softwood, wet pulp
Brand: Toppila (Blue) Strong; also second and third qualities

Veitsiluoto O/Y (V.L.)

Veitsiluoto
Representative: Pulp Sales Corp.
Sulfite, unbleached
Standard grades
Brands: VL (Green) Extra

Strong; VL (Blue) Strong; also semi-prime, second and third qualities, and dry screenings
Semi-chemical pulp
Special grades—wet pulp
Brands: VL (Blue) SA; VL (Black) SA

Yhtyneet Paperitehtaat O/Y

Jamsankoski and Walkiakoski
Representative: Pulp Sales Corp.
Sulfite, bleached
Standard grades — softwood, hardwood
Brands: Ilves (Black) Soft; Ilves Aspen (hardwood)
Sulfite, unbleached
Special grades
Standard grades
Brands: Walkiakoski (Blue) Strong; Walkiakoski BL Bleachable

NORWAY

Borregaard, Aktieselskapet

Sarpaborg
Agent: The Borregaard Co., Inc.
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: V.S.; Super V.S.; Super A-1; A-1

Greaker Cellulosefabrik A/S

Greaker
Agent: Price & Pierce, Ltd.
Sulfite, bleached
Special grades
Standard grades
Brand: Greaker Sunshine

Hurum Fabriker, Aktieselskabet

Oslo
Agent: Castle & Overton, Inc.
Sulfate, bleached
Sulfate, unbleached

Katfos Fabriker, Aktieselskabet

Geithus
Agent: Castle & Overton, Inc.
Sulfite, unbleached

Krogstad Cellulosefabrik Aktieselskabet

Krogstad, pr. Mjondalen
Mjondalen
Agent: Castle & Overton, Inc.
Sulfite, bleached
Standard grades

Mjondalen Cellulosefabrik Aktieselskabet

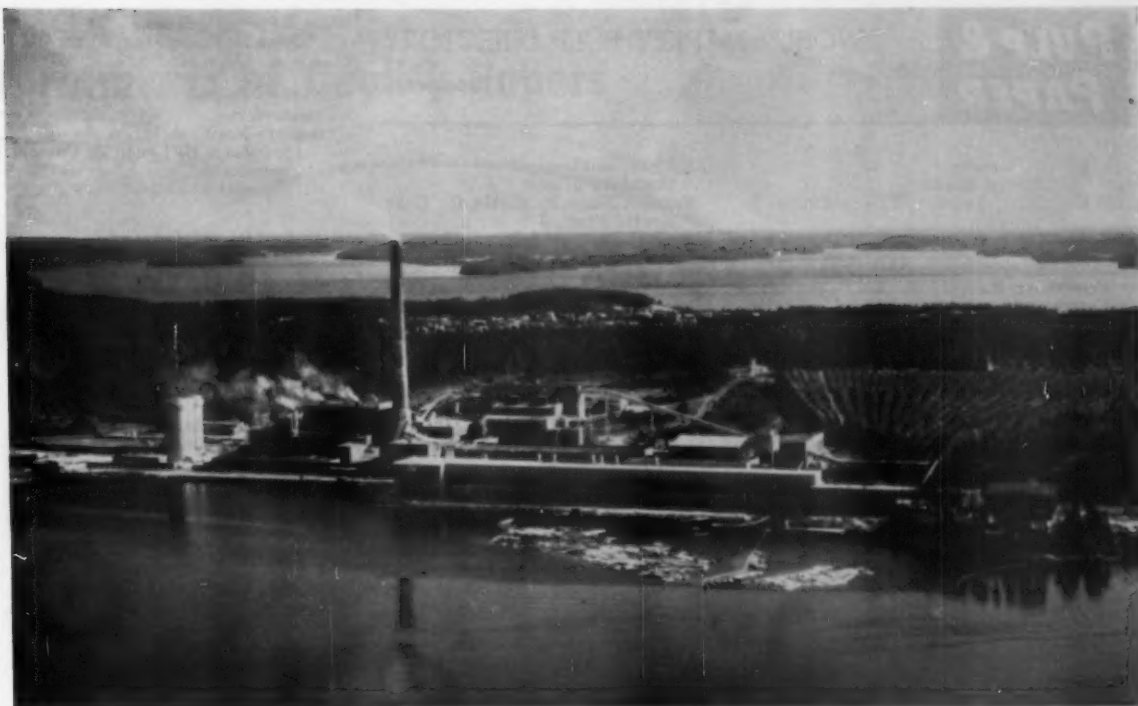
Mjondalen
P. O.: Drammen
Agent: Perkins-Goodwin Co.
Sulfite, bleached
Standard grades
Brand: Mjondalen BA

Tofte Cellulosefabrik Aktieselskabet

Oslo
Agent: Castle & Overton, Inc.
Sulfite, bleached
Special grades
Standard grades

Toten Cellulosefabrik Aktieselskabet

Nygard Station
Gjovikbanen
Agent: Castle & Overton, Inc.



*More Pulp to you
from expanding production
including Bleached Kraft!*

**FINLAND
MODERN MILLS
QUALITY WOODPULP**

MONTHLY SHIPMENTS THROUGHOUT THE YEAR

(NO CLOSED NAVIGATION)

PULP SALES CORPORATION

230 PARK AVE., NEW YORK 17, N. Y.

TEL: OREGON 9-3640

Sulfite, bleached
Standard grades
Brands: Toten TTT Prime
Bleached

Vestfos Cellulosefabrik Aktieselskabet
Vestfossen Railway Station
Vestfossen
Agent: Castle & Overton, Inc.
Sulfite, bleached
Special grades
Standard grades

Viul Tresliperi, A/S
Viul Station
Honefoss
Agent: Castle & Overton, Inc.
Groundwood
Dry and Wet

EUROPEAN CONTINENT

Kellner-Partington Paper Pulp Co. Ltd
Hallein bei Salzburg, Austria
Mills at: Hallein & Villach
Agent: The Borregaard Co., Inc.
Sulfite, bleached
Dissolving and related grades
Special grades
Brands: Sp.C.; Super BL; Super
BIDD

L'Alfa S.A.
Paris, France
Agents: Lyddon & Co. (America)
Inc., Parsons & Whittemore, Inc.
Bleached Esparto

Zellstofffabrik Waldhof
Leberberg 9, Wiesbaden 16, Ger-
many
Agent: Castle & Overton, Inc.
Bleached sulfite

N. V. Stroostofffabriek "Phoenix"
Veendam, Holland
Agents: Lyddon & Co. (America)
Inc., Parsons & Whittemore, Inc.
Bleached straw pulp

Fabrik Celuloza Prijedor
Sarajevo, Yugoslavia
Agent: Gottesman & Co., Inc.
Sulfite, unbleached
Standard grades

SWEDEN

Bengtssons Sulfittaktiebolag
Bengtssons
Agents: Lyddon & Co. (America)
Inc., Parsons & Whittemore, Inc.
Sulfite, bleached
Standard grades
Brands: Bengtssons Prime BL;
Dissolving and related grades
Brands: Corona Super I; Corona
Super II; Corona USA

Bergvik och Ala Aktiebolag
Soderhamn
Agent: Elof Hansson, Inc.
Sulfite, unbleached (Mitscherlich)
Standard grades

Sulfate, unbleached
Standard grades
Brands: Goat S; Circle G; Goat
Kraft; Star; J

Billeruds Aktiebolag
Saeffle
Agent: Elof Hansson, Inc.
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: Billerud S; SS; SSS; VL;
Billerud Castle

Bure Aktiebolag
Burea
Agent: Cellulose Sales Co., Inc.
Groundwood
Dry
Brand: Bure

Dynas Aktiebolag
Waija
Agents: Gottesman & Co., Inc.
Perkins-Goodwin Co.
Sulfate, unbleached
Special grades
Standard grades
Brands: Dynas; Dynas Chlorine
No. 5

Eds Cellulosafabriks Aktiebolag
Eds Bruk
Agent: Elof Hansson, Inc.
Sulfate, unbleached
Special grades
Brands: Eds Two Stars Soft A;
Light & Strong Kraft

Edsvalla Bruk, Aktiebolaget
Edsvalla
Agent: The Borregaard Co., Inc.
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: Edsvalla V.S.; Edsvalla
Super; Edsvalla S.E.B.

Essviks Aktiebolag
Sundsvall
Agent: Cellulose Sales Co., Inc.
Sulfite, bleached
Brands: Essvik "Special" Tissue
Quality; Essvik "Three Star"
Prime Quality; "Pulpose" Dis-
solving grades

Forshaga Sulfitt Aktiebolag
Forshaga
Agent: The Borregaard Co., Inc.
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: Forshaga V.S.; Forshaga
Super; Forshaga

Forss Aktiebolag
Kopmanholmen
Agent: Price & Pierce, Ltd.
Sulfate, bleached
Special grades
Standard grades
Sulfate, unbleached

Special grades
Brands: Forss Star; Forss OK

Forss Woodpulp Mill
Oesterforse
Agent: Nordicus Inc.
(See John B. Lynch & Co., Inc.)
Groundwood
Special unbleached dry

Gota Sulfittaktiebolaget
Gota
Agent: Perkins-Goodwin Co.
Sulfite, unbleached
Standard grades
Glassine grades

Hellefors Bruks Aktiebolag
Hellefors
Agent: Elof Hansson, Inc.
Sulfite, unbleached
Special grades
Standard grades
Brands: HB; EB; HB Strong;
HB Diamond

Hissmofors Aktiebolag
Krokmo
Agent: Bulkley, Dunton Pulp Co.,
Inc.
Sulfite, unbleached
Standard grades
Brand: Elkhead

Hogfors Trasliperi, A/B
Haggenas
Agent: Gottesman & Co., Inc.
Groundwood
Special unbleached
Standard unbleached

Holmsunds Aktiebolag
Holmsund
Agent: Cellulose Sales Co., Inc.
Sulfate, unbleached
Brands: Obbola "30" Prime Light
& Strong Bleachable; Obbola
"50", "60" and "70" Prime
Strong Qualities; Obbola "K"
Refined Screenings

Hylte Bruks Aktiebolag
Hyltebruk
Agent: Pagel, Horton & Co., Inc.
Sulfite, unbleached
Special grades
Standard grades
Brands: Hylte Bruk H.1 Prime
unbleached Sulfite; Hylte Bruk
H.1.B.; Hylte Bruk H.2; Hylte
Bruk H.3

Iggesunds Bruk, Aktiebolaget
Iggesund
Agents: Bulkley, Dunton Pulp Co.,
Inc.
Gottesman & Co., Inc.
Perkins-Goodwin Co.
Sulfite, bleached
Standard grades
Sulfate, bleached
Special grades
Standard grades
Sulfate, unbleached
Special grades
Standard grades
Groundwood
Special unbleached
Standard unbleached
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White Anchor

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Agent: Perkins-Goodwin Co.
Sulfate, bleached
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Standard grades
Sulfate, unbleached
Special
Brands: Norrland One Star; KHB
90; Norrland Three Star; KHB
Condenser

Korsnas Aktiebolag

Gavle 2
Agents: Pagel, Horton & Co., Inc.
Sulfite, bleached
Dissolving and related grades
Special grades
Super grades
Standard grades
Sulfate, bleached
Super grade
Semi-bleached
Brands: Roburwite Extra Prime

Kramfors Aktiebolag

Kramfors
Agent: Cellulose Sales Co., Inc.
Sulfite, unbleached (Mitscherlich)
Kramfors "Puritan" Prime
Glassine quality (Shipped
either 30 to 50% moist or air
dry); Kramfors "AA" and
"Puritan" Prime Qualities;
Kramfors "B" Second Quality;
Kramfors "K" refined Screen-
ings
Sulfate, unbleached
Brands: Nesjo "30" Prime Light
& Strong Bleachable; Nesjo
"45" Bleachable; Nesjo "60"
Strong; Nesjo "K" Refined
Screenings
Groundwood, Moist
Byske Groundwood Mill
Ulvvik Groundwood Mill

Mackmyra Sulfit Aktiebolag

Mackmyra
Agent: Bulkley, Dunton Pulp Co.,
Inc.
Sulfite, unbleached
Special grades
Brands: MS; M

Marma Langrors A/B

Lottefors
Agent: Price & Pierce, Ltd.
Groundwood
Special unbleached
Brand: Lottefors L

Marma Langrors A/B

Soderhamn
Agent: Price & Pierce, Ltd.
Sulfate, unbleached
Special grades
Standard grades
Brand: Marma LJ Kraft; Marma
LJ Kraft '50' Insulating

Marma Langrors Aktiebolag

Vallvik
Agent: Price & Pierce, Ltd.
Sulfite, unbleached
Special grades
Standard grades
Screenings
Brands: LJ Two Crown Extra,
LJ One Crown

Mo & Domsjo, Aktiebolag

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Sales Office: Strandvagen 1, Stock-
holm
Mills at: Domsjo, Hornefors and
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Agent: Pagel, Horton & Co., Inc.
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Dissolving and related grades
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Super grades—Softwood, hard-
wood
Standard grades — softwood,
hardwood
Sulfate, bleached
Super grades—softwood, hard-
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White Horse Strong Prime
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Sulphite; Modocell; Modosilk;
Modosilk Extra; Modosilk Super;
Modocord; Modoceta; Modofoto;
Modoplast; Modolint.

Munkedals Aktiebolag

Munkedal

Agent: Elof Hansson, Inc.

Sulfite bleached

Standard grades — softwood,
hardwood

Brands: Munkedal SGR; SAB

Munksjo, Aktiebolag

Jonkoping

Agent: Gottesman & Co., Inc.

Sulfate, unbleached

Standard grades

Brand: Aspa

Munksunds Aktiebolag

Lulea

Agent: Cellulose Sales Co., Inc.

Sulfate, unbleached

Munksunds "50", "60" and "70"

Prime Qualities

Screenings

Munksunds "K" refined screen-

ings

Groundwood

Lulea groundwood mill

Oskarstrom Sulphite Mills Aktiebolag

Oskarstrom

Agents: Gottesman & Co., Inc.

Elof Hansson, Inc.

Sulfite

Easy bleaching

Standard grades

Brands: Oskarstrom TT/S; TT;

H; X

Ostrands Aktiebolag

Sundsvall

Agent: Cellulose Sales Co., Inc.

Sulfate, bleached

Brands: Ostrand "W88" Prime;

Ostrand "WB" Half Prime;

Ostrand "WII" Second Quality;

Ostrand "X90" Prime Birch; Os-

strand "XB" Half Prime Birch;

Ostrand "XII" Second Quality

Birch

Sulfate, unbleached

Brands: Ostrand "Special" and

Ostrand "40" Light Colored

Bleachable; Ostrand "50", "60"

and "70" Prime Strong Quali-

ties; Ostrand Birch Prime

Hardwood

Rottneros Bruk, Aktiebolaget

Rottneros

Agent: Elof Hansson, Inc.

Groundwood

Standard unbleached—wet

Sandvikens Cellulosa A.B.

Sandviken

Agent: Nordicus Inc.

(See John B. Lynch & Co., Inc.)

Sulfate, unbleached

Special grades

Brands: S Crown 3; Special Cable

Scharins-Soner Aktiebolaget

Clemensnas

Agent: Elof Hansson, Inc.

Groundwood

Standard unbleached—dry

Brand: Skelleftea

Skonviks Aktiebolag

Skonvik

Agent: Cellulose Sales Co., Inc.

Sulfite, bleached (Mitscherlich)

Skonvik "190" Bond grade;

Skonvik "G" Glassine grade;

Skonvik "Crown" Book grade

Stjernfors-Stalldalen Aktiebolaget

Stalldalen

Agent: Elof Hansson, Inc.

Sulfite, unbleached

Standard grades

Brand: Stalldalen SS

Stora Kopparbergs Bergslags A/B

Falun

Agent: Stora Kopparberg Corp.

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Standard grade

Sulfate, bleached

Super grade



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Stora 32

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Ockelbo
Agent: Pagel, Horton & Co., Inc.
Sulfite, unbleached
Special grades
Standard grades
Brands: Storvik HS Extra Prime
Strong Unbleached; Mitscherlich
Sulphite; Storvik HS
Prim Strong Unbleached; Mit-
scherlich Sulphite; Storvik
Strong Unbleached Mitscherlich
Sulphite; HS.

Stroms Bruks Aktiebolag

Stromsbruk
Agent: Bulkley, Dunton Pulp Co.,
Inc.
Sulfite, bleached
Dissolving and related grades
Standard grades
Brand: Stroms

Sunds Aktiebolag

Sundsvall
Agent: Cellulose Sales Co., Inc.
Sulfite, unbleached
Brands: Strong Mitscherlich and
Easybleaching qualities; Sund
"I" Prime Mitscherlich; Sund
"Three Crown" Prime Easy-

bleaching; Sund "Two Crown"
Half Prime Easybleaching;
Sund "K" Refined Screenings

Svano Aktiebolag

Svanobruk
Agents: Gottesman & Co., Inc.
Elof Hansson, Inc.
Perkins-Goodwin Co.
Sulfite, unbleached
Special grades
Standard grades
Brands: White Swan; White
Swan LN; H; S; IIB; LN/H

Svartviks Aktiebolag

Sundsvall
Agent: Cellulose Sales Co., Inc.
Sulfite, bleached
Brands: Svartvik "Select"
"Pulpcose" Dissolving and High
Alpha Acetate Pulps

Svenska Cellulosa Aktiebolaget

Sundsvall
Agent: Cellulose Sales Co., Inc.
See separate listings for:
Essviks Aktiebolag
Holmsunds Aktiebolag
Kramfors Aktiebolag
Munksunds Aktiebolag
Ostrands Aktiebolag
Skonviks Aktiebolag
Sunds Aktiebolag
Svartviks Aktiebolag

Aktiebolag Tegefors Verk

Hjerpen
Agent: Price & Pierce, Ltd.
Sulfite, bleached
Special grades
Standard grades
Brands: Polar Bear "G" Grease-
proof Glassine; Polar Bear
"Strong"; Polar Bear "Stand-
ard"; Polar Bear "Soft"; Polar
Bear "Birch" (hardwood)

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Agent: Perkins-Goodwin Co.
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Dissolving and related grades
Special grades
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Utansjo Cellulosa A.B.

Utansjo
Agent: Nordicus Inc.
(See John B. Lynch & Co., Inc.)
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Standard grades
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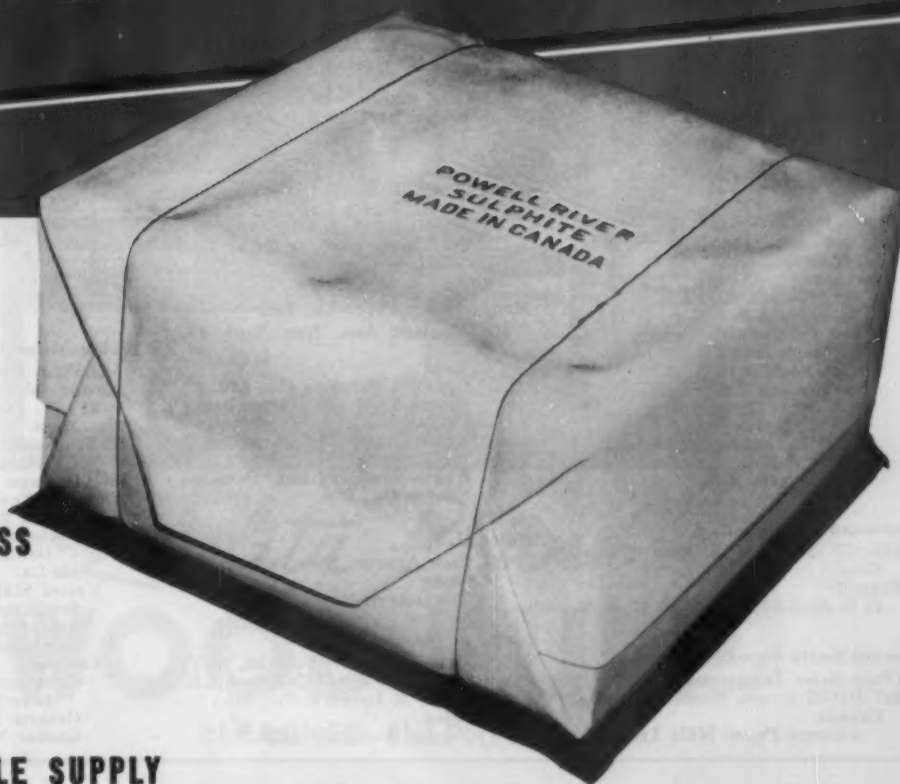
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What's Ahead for Dissolving Pulp

World market conditions contrast sharply with those in North America—Latter's exports are greatly increased

By REX VINCENT

Vice President, Tech. Consultant,
Bulkley, Dunton Pulp Co.

● The year 1954 will be a milestone in the history of the woodpulp industry of the United States and Canada.

In that year the U. S. not only became self-sufficient, but turned the corner and exported more than was imported. This, of course, is true only if the imports from our neighbor to the north are discounted or if the movement is restricted to overseas trade.

The producing area of North America—U. S. and Canada—is now in such a position that if there were some event which would restrict international trade, supplies for home buyers would actually increase. While this is true for the category, "all grades," it is axiomatic for the dissolving grades. These producers are not only supplying large quantities of paper pulp to domestic buyers, satisfying the North American demand for their primary grades of dissolving pulp, but they need the export market. Statistics presented later will demonstrate just how much they need that market. Thus, here at home, producers are now becoming very much aware of a statement that always has been acknowledged by the market pulp buyers: Pulp is an international commodity.

The export of purified wood cellulose has been of relative minor importance and had been very slow in its growth until 1954. As recently as 1950 American exports of this pulp were only 27,000 tons and Canadian ex-

ports, only 35,800 tons. In 1954 U. S. exports were 162,000 tons and Canadian exports, 145,700 tons. Thus Canada is shipping overseas about 50% as much as she ships to the U. S. and the U. S. is shipping overseas about 33% as much as is being shipped to American rayon yarn mills. Actually these figures are like this for 1954:

Purified Wood Cellulose Shipments

	Tons
U.S.—Shipped overseas	162,000
U.S.—Shipped for rayon and acetate	477,300
Canada—Shipped overseas	145,730
Canada—Shipped to U.S.	228,143

The export of this grade of pulp has increased in importance from 10.4% in 1950 to 25% in 1954.

Where does this quantity go? The answer in brief is: All over the world. It goes into markets that were formerly supplied almost entirely by the Scandinavian producers. Today the Scandinavians cannot supply enough of these grades, and North America is picking up this excess demand. Of these exports 35% went to the United Kingdom, 13% to West Germany, and 21% to Japan. The balance went to France, Italy, Spain, Cuba, South American countries, and even the Soviet Union.

IMPORTANCE OF OVERSEAS MARKET—When 25% of the production of this pulp is going overseas, the importance of that market to the American and Canadian producers becomes obvious, and it means that they

REX VINCENT—
"Of North American production of dissolving pulp, 25% is going overseas."



must expend the same amount of serious effort as they have spent in the U.S. In the spring of 1955, the directors of Rayonier, Inc., met in France with rayon yarn producers of the Continent. This meeting was to assure yarn producers in Europe that Rayonier intends to remain a major supplier of purified cellulose for European consumption. The competition involved is keen and complicated.

American prices, in general, are higher than Swedish prices, and the business requires dollar currency. With these two strikes against them, the North American producers must deliver superior quality in order not to lose their position if the demand should decrease. There are many who do not foresee this at all, pointing to the increasing economic stability of the Continent and England, the natural growth of population, and the continued improvement in the various rayon textiles. Competition from other textiles in Europe such as the non-cellulosics and cotton is far different from what it is in the U.S.

It is fortunate that the demand from abroad came at the time that three new mills were coming into production. The new mills of Ketchikan Pulp Co., Rayonier Inc. at Jesup, Ga., and Buckeye Cellulose at Foley, Fla., all came into production in the same 30-day period: about June of last year. The real increase in exports did not come until the last half of 1954. For example, U.S. exports of the dissolving grades were 28,000 tons in the

A Timely Analysis of Markets in U.S.A. and Overseas

Each year, this exclusive feature is a highlight of PULP & PAPER's WORLD REVIEW NUMBER.

It is written by one of the most experienced observers of the dissolving woodpulp field. With further expansion in this field recently announced, this analysis of the markets in U.S.A. and abroad is very timely.

first quarter and 49,500 tons in the third quarter.

These three new mills brought the supply capacity of purified wood cellulose of North America up to approximately 1,850,000 tons per year based on 350 operating days. There is currently further expansion underway amounting to 75,000 tons a year and for the time being the supply side of the equation will be stabilized and will remain at about this level for the next year or two.

There is one unknown factor in this supply/demand equation which concerns the amount of paper grade pulp being manufactured by the dissolving pulp producers. They are manufacturing paper pulp in significant amounts, and it would be quite troublesome if this paper pulp were to be withdrawn to satisfy increasing demands for the dissolving grades, which, after all, are their primary grades. While it cannot be proved, there is good indication that the dissolving pulp producers manufactured close to 350,000 tons of paper pulp in 1954. Therefore, while it is said that only a small dissolving pulp expansion is foreseen, it is quite possible for these producing units to expand their existing facilities in order to maintain their paper pulp relationships and use the expansion to reduce total overhead costs. Currently the dissolving pulp producers are as follows:

North American Dissolving Pulp Cos.

Company	No. of Mills
Rayonier Inc.	5
Weyerhaeuser Timber Co.	1
Brown Co.	1
International Paper Co.	1
Buckeye Cellulose Corp.	1
Ketchikan Pulp Co.	1
Fraser Companies, Ltd.	1
Canadian Int. Paper Co.	3
Alaska Pine & Cellulose	2
Columbia Cellulose	1

The above list is not absolutely correct, inasmuch as Rayonier has purchased 80% of the common stock of Alaska Pine & Cellulose, Ltd. and it is being operated as a subsidiary of Rayonier. This combination gives Rayonier control of 7 mills with an effective capacity of approximately 730,000 tons per year and makes them the primary world producer of purified wood cellulose (Eds. Note—Rayonier now is making plans for another mill).

Many economists have regarded 1954 as a year of recession and have spoken of 1955 as a recovery from the recession, approaching the peaks established in 1953. This may be true for industry in general in the U.S., but it certainly doesn't apply to the production of purified wood cellulose as shown in Table I. The consumption

TABLE I

U. S. PURIFIED WOOD CELLULOSE (In Short Tons)

Year	Production	Imports	Exports	Net Available
1938	171,650	65,220	72,800	164,070
1940	288,500	113,945	115,204	287,241
1943	369,731	129,380	22,884	476,226
1944	429,545	132,675	10,729	551,491
1945	355,820	146,030	13,030	488,820
1946	295,680	198,540	9,300	484,920
1947	408,460	248,070	14,570	641,960
1948	421,924	239,842	14,665	647,101
1949	371,422	154,348	3,857	521,913
1950	473,210	238,856	27,284	684,781
1951	615,776	230,038	32,944	812,920
1952	705,828	223,340	61,850	867,315
1953	678,180	255,781	66,513	867,448
1954	775,003	230,384	161,916	843,471

Source: U.S.P.P.A.

TABLE II

U. S. PURIFIED WOODPULP IMPORTS (By country of origin—Short tons)

	1948	1949	1950	1951	1952	1953	1954
Canada	224,942	149,801	229,102	225,836	220,019	254,232	228,143
Sweden	9,080	3,888	2,177	3,683	2,240	712	1,084
Finland	3,718	—	158	—	—	—	11
Norway	2,101	—	1,021	475	307	837	1,146
Others	—	—	1,398	94	770	—	—
TOTAL	239,841	154,348	238,856	230,088	223,337	255,781	230,384

Source: U.S.P.P.A.

TABLE III

NORTH AMERICAN PURIFIED WOODPULP (Short tons)

Year	Production	Imports	Exports	Net Available
1947	707,000	23,700	56,000	674,700
1948	754,000	14,900	80,400	688,500
1949	620,930	4,550	83,150	542,330
1950	796,312	9,745	83,149	722,908
1951	1,014,240	4,152	151,029	867,363
1952	1,129,400	3,317	181,471	951,245
1953	1,132,338	1,549	214,658	919,229
1954	1,230,588	2,241	307,729	925,100

of this grade in the U.S. was down, being below that of 1952, but the production established a high point of 775,000 tons.

U.S. IMPORTS LESS—The imports of this grade have become negligible from overseas sources, while those from Canada seem to have leveled out pretty well around a figure of 225,000 tons. This seems to be the level that Canadian producers desire in this market, and it probably will not change greatly until there are further production expansions in Canada. Table III places the statistics on the North American basis and demonstrates the peak in production on this basis so far of 1,230,600 tons. Table III also shows that the net available for consumption in North America has been rather steady over the years 1952, '53 and '54.

Somewhere in the gap between a production of 1,230,000 tons of dissolving pulp and a capacity for about 1,800,000 tons lies the paper pulp

produced and that portion of production capacity which was not available for the entire year. The three new mills did not begin producing this grade of pulp until well towards the end of a third quarter of last year.

The year 1955 will show considerably different figures particularly with respect to production and exports for, while the first quarter of 1955 showed Canada producing and exporting overseas at about the same rate as the first quarter of 1954, the U.S. was running 50% over 1954's first quarter exports and about 30% over 1954's first quarter production.

With respect to prices, these pulps have moved through quite a long period of stability and have now remained at the same level for nearly four years. Scandinavian prices during 1954 were also stable. Prices effective December 31, 1954:

Grade of Pulp	Price Per Ton*
Cellophane	\$185 delivered
Std. Viscose	\$185 delivered

Hi-Tenacity \$195 delivered
 Acetate \$225 delivered
 Sheet Linter \$200 f.o.b. mill
 Bulk Linter \$195 f.o.b. mill
 *All above prices are per ton of 2,000 lbs. air-dry weight.

RAYON AND ACETATE TRENDS—

The year 1954 was not a good year for the rayon-acetate industry. The production of rayon-acetate in 1954 amounted to 542,850 tons, a decrease of 9% from the 1953 production of 598,450 tons. All branches of the industry showed declines in production except rayon staple and tow which increased by 42%. Compared with 1953, high tenacity rayon yarn was down 25%; regular yarn, down 16%; acetate yarn, 13%, and acetate staple and tow, 26%.

This is an interesting shift in the industry, as for the past several years the one segment which continually showed improvement was the high tenacity yarn used for tire cord. But in 1954 the staple and tow was the active branch. This is probably due to the use of the material in innumerable fiber blends particularly in carpeting and rugs.

As far as the high tenacity yarn is concerned, it is having considerable trouble with nylon in the tire cord field. Cotton has been largely replaced as a tire cord fabric, first by rayon and now by nylon, which is beginning to displace rayon. During 1953 nylon's average share of the tire cord fiber was slightly less than 4%. During the third quarter of 1954 nylon had moved up to where it represented 9% of the total tire cord and fabric produced.

The cellulosic fibers continue to encounter terrific competition from the noncellulosic fibers, and there are today so many different kinds of man-made fibers available that it is no wonder that blends and textiles and consequently styles themselves are continually changing. It will probably be some time before the noncellulosic fibers settle into their proper niche, and until that time comes, this continual fluctuation will endure.

Rayon and acetate productive capacity surveys made by the Textile Organon show the effect of this competition. The surveys made by this publication report capacity forecasts as of varying dates: For Nov. 1, 1954 their capacity forecast was 841,500 tons, and of this, 278,000 tons was for staple and tow. The capacity forecast for Oct. 1, 1956 is 867,000 tons of which 303,000 tons are for staple and tow. Thus the increase in capacity forecast over the next year and a half is all in staple and tow.

Table IV gives the production of

TABLE IV
U. S. Rayon-Acetate Production by Types.
(Short tons)

	1949	1950	1951	1952	1953	1954
Viscose and cupra-ammonium filament	272,150	313,500	329,050	297,250	328,800	254,450
Acetate filament	127,500	163,500	150,050	117,150	114,650	98,950
Viscose staple and tow	64,900	94,500	103,650	105,900	109,550	155,750
Acetate staple and tow	32,350	58,500	64,350	47,600	45,450	33,700
TOTAL	496,900	630,000	647,100	567,900	598,450	542,850

TABLE V

Year	Total Rayon-Acetate Pulp	Woodpulp Consumed	%	Linter Pulp Consumed	%
1930	63,850	45,000	62	27,000	38
1935	131,077	86,000	63	51,000	37
1940	235,585	178,000	75	60,000	25
1942	316,308	280,500	88	39,500	12
1944	361,977	285,000	78	82,000	22
1945	396,000	297,000	74	103,000	26
1946	427,000	323,000	75	105,000	25
1947	478,000	397,000	83	81,000	17
1948	539,500	435,000	81	104,500	19
1949	478,600	348,700	73	127,900	27
1950	590,600	456,200	77	134,400	23
1951	616,300	515,500	84	100,800	16
1952	549,500	484,700	88	64,800	12
1953	589,100	522,000	89	67,100	11
1954	537,800	477,300	89	60,500	11

Source: Textile Organon

rayon acetate by process and type for several recent years.

The decreased production is, of course, shown in a lower consumption of cellulose, and in 1954 less cellulose was used by rayon and acetate than in any year since 1949.

Table V gives the statistics for recent years on the consumption of cellulose by this industry. The consumption of cotton linter pulp is the lowest since back in the middle forties, but the relationship between woodpulp and linter pulp remains the same as last year, namely 89% woodpulp and 11% linter pulp.

BREAKDOWN SHOWS WOODPULP USE 89%—A breakdown of the consumption of cellulose by process shows that 447,800 tons of cellulose was consumed by the viscose-cupra process. Of this total, 400,300 tons was woodpulp and the balance of 47,500 tons, cotton linter pulp. This relationship is higher for woodpulp than previously where the percentage of wood cellulose averaged around 87%. Acetate production required a total of 90,000 tons of cellulose of which 77,100 tons was woodpulp and 12,900 tons, or 14%, was linter pulp. The woodpulp percentage of 85% is lower than it has been recently. In the years 1952 and 1953, woodpulp was 93% and 94%, respectively, of the total used. This decrease was probably due to price factors which were favorable to cotton linter pulp.

With respect to cotton linter pulp, estimates show that about 60,500 tons was produced last year. This quantity was less than 1952 and 1953 where

the production was 64,800 tons and 67,100 tons, respectively.

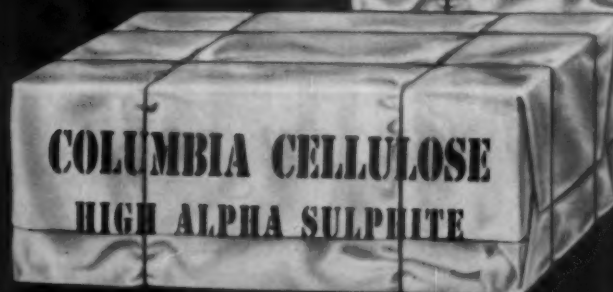
Before leaving the viscose-acetate industry, a further comment should be made relative to the importance of the export market to these grades of pulp. The world rayon and acetate production for 1954 was 2,180,000 tons, a 5% increase over the 2,071,000 tons produced in 1953. The world production increased by 5% while the U.S. production decreased 9%. In 1953 the U.S. production was 29% of the world production and in 1954 it fell to 25% of the world production. Back in 1946 and 1947 U.S. production was 50% of the world production.

Many people believe that the U.S. percentage of the world production of rayon and acetate will continue to decline because of the rising production of these fibers in other parts of the world. The U.S. is unique in that there is such an intensive competition among the textile fibers such as cotton, wool, cellulose and noncellulose. In continental Europe, for example, the competition between cotton and rayon is not anything like it is here. Shoe laces and string, for example, are made of rayon in France.

CELLOPHANE IS SECOND LARGEST CONSUMER—Another segment of the viscose process—cellophane—is the second largest consumer of purified wood cellulose, and it is demonstrating a growth factor as opposed to the decline of the other viscose product, namely, rayon yarn. The end-use of this transparent film is spread across a very wide and variegated number of products. Most of the pro-

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Sales Office — 2035 Guy St., Montreal, Que.

duction today is going into the packaging of various tobacco products, perhaps as much as 50%. The balance is spread over food products including candy, bakery goods and prepackaged meat. The development of the supermarket with its self-service has found that the display of products, which means the package, has become very important since there is no sales person to explain, demonstrate and push.

Approximately 168,000 tons of woodpulp was consumed by the cellophane industry in 1954, a slight increase over the figure for 1953. This is what you might call a well-informed guess, as there are no statistics available on the production of this material. The top capacity of the industry is believed to be about 180,000 tons of pulp consumption. Olin-Matheson Chemical Corp. has a new plant under construction in southern Indiana which will have a capacity of about 3,000,000 lbs. of cellophane per year.

PLASTICS AND OTHER PULP USERS—The other end-uses of dissolving woodpulp are spread over a wide range of diversified products and industries where no statistics exist and where it is difficult to determine whether usage is increasing. The plastics are "lumped" together, and film is excluded. Some of the derivatives are reported on different bases and are

TABLE VI
Cellulose Uses—1954
(Thousands of short tons)

Net available production for North America	925
Increase in producers' inventories	16
Total available	909
Consumed in Canada	58.6
In-transit shipments	15
Balance available for U.S.	835.4
Rayon-acetate	477
Cellophane	168
Balance for other uses	190.4
Cellulose plastics incl. nitrocellulose	60
Misc. viscose (sponges, caps, bands)	8.5
CMC	6.5
Other derivatives	8
Sanitary napkins and absorbents	18
Vulcanized fiber and floc	12
All grades of paper	77.4

hidden in statistics for organic chemicals. Only estimates and guesses can be used to determine the quantities of wood pulp consumed.

Regarded as plastics are cellulose nitrate, cellulose acetate, cellulose butyrate, ethyl and methyl cellulose. The statistics for these are reported in pounds, and they include fillers and plasticizers. Sometimes these materials form over half of the plastic itself and sometimes they are not used at all. Carboxymethyl cellulose and hydroxyethyl cellulose are statistically reported as organic chemicals. There are no figures for the latter, but carboxymethyl cellulose was reported as

8,350 in 1951, 7,050 tons in 1952 and 10,835 tons in 1953, the latest figure available.

In the table below are the Tariff Commission Reports for the cellulose plastics. The acetate figures include sheets, rods, tubes, molding powder and extruded. It also includes the mixed esters, butyrate, propionate, and the combination. There are no figures for the amount of nitrocellulose going into lacquers and finishes of various kinds and the reports do not indicate if any photographic film is included in the cellulose acetate figures. These statistics do not include any nitrocellulose being converted into smokeless powder by the ordnance plants.

CELLULOSE PLASTICS—U. S.
PRODUCTION IN SHORT TONS

	1951	1952	1953	1954
Acetate	48,708	42,724	57,285	56,190
Nitrate	3,805	3,010	3,800	2,633
Other	5,972	3,326	3,136	2,780

Table VI is an attempt to strike a balance on the various consumers of this type of pulp. Since the material ranges over such wide industrial uses and goes into such different industries as sanitary napkins and vulcanized fiber, these figures are a mixture of genuine statistics, guesses of the author, and guesses of those in the various industries.

Announcing:

A new continuous process for the production of high strength, high yield, low cost pulp and paper from sugar cane bagasse. Commercially tested and proved by the

PROCESS EVALUATION & DEVELOPMENT CORP.

3 Hanover Square

New York 5, N. Y.

Why Rayonier will build another big capacity plant now

Rayonier's in the world cellulose markets to stay. This was dramatically emphasized by Rayonier's directors meeting in Paris in May 1955.

There they announced Rayonier would soon begin construction of yet another major chemical cellulose plant, and have it in operation by 1957.

This will be Rayonier's eighth—a modern, years-ahead mill in North America. And it will have a production capacity of 100,000 tons of prime quality chemical cellulose a year.

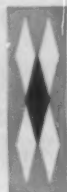
Already Rayonier is supplying its overseas customers with more than 25% of its annual output. More and more, Rayonier's new ever improved products at fair and reasonable prices are increas-

ingly sought by the world's leading cellulose users.

Various projects underway plus the newly-announced plant coming soon after the new Jesup, Georgia mill—in operation since June 1954—and the recent acquisition of Alaska Pine & Cellulose Limited of Vancouver, B. C., will boost Rayonier's annual capacity to 925,000 tons of top quality chemical cellulose by 1957.

Add to this a continuing program of plant modernization, constantly improved products, growing forest resources, broader technical services and sales facilities, and you see that Rayonier is ably prepared for the even larger demands the future holds for the cellulose.

RAYONIER
INCORPORATED



cellulose chemistry



RESTIGOUCHE
BLEACHED SULPHITE PULP

*for the manufacture of
Cellophane, Rayon and
Products of Paper.*



RESTIGOUCHE COMPANY, LTD.
Campbellton, N. B., Canada



BLOEDEL
"SUPERTARE" KRAFT
production: 80,000 tons



2
pulp
brands
preferred
in exacting
world
markets

HARMAC
BLEACHED SULPHATE
production: 215,000 tons

manufactured under rigid quality control by
MACMILLAN & BLOEDEL LIMITED
VANCOUVER, CANADA

"SERVING THE WORLD WITH FOREST PRODUCTS"



**GREEN BAY PAPER
& PULP COMPANY**

GREEN BAY WISCONSIN

West Virginia Pulp and Paper Company Pioneers New Waste Treatment Process

Dorr-Oliver Equipped Plant Sets Pattern For Industry

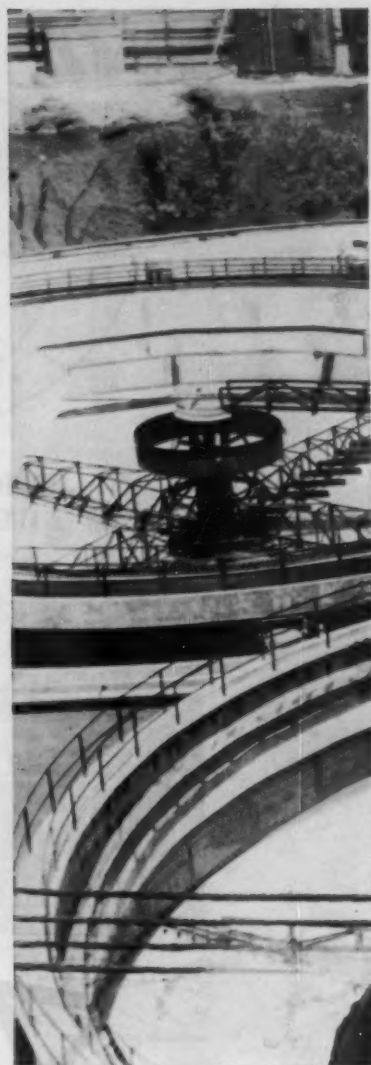
Covington, Va. Industrial waste treatment has taken a major step forward with the start-up of this new plant at West Virginia Pulp and Paper Company's Covington, Va., mill. A "first" for the alkaline pulping industry, it points the way toward a solution of these tough-to-handle wastes. Two years of pilot plant work went into the final design and the Covington mill's River Research Group worked closely with the National Council for Stream Improvement

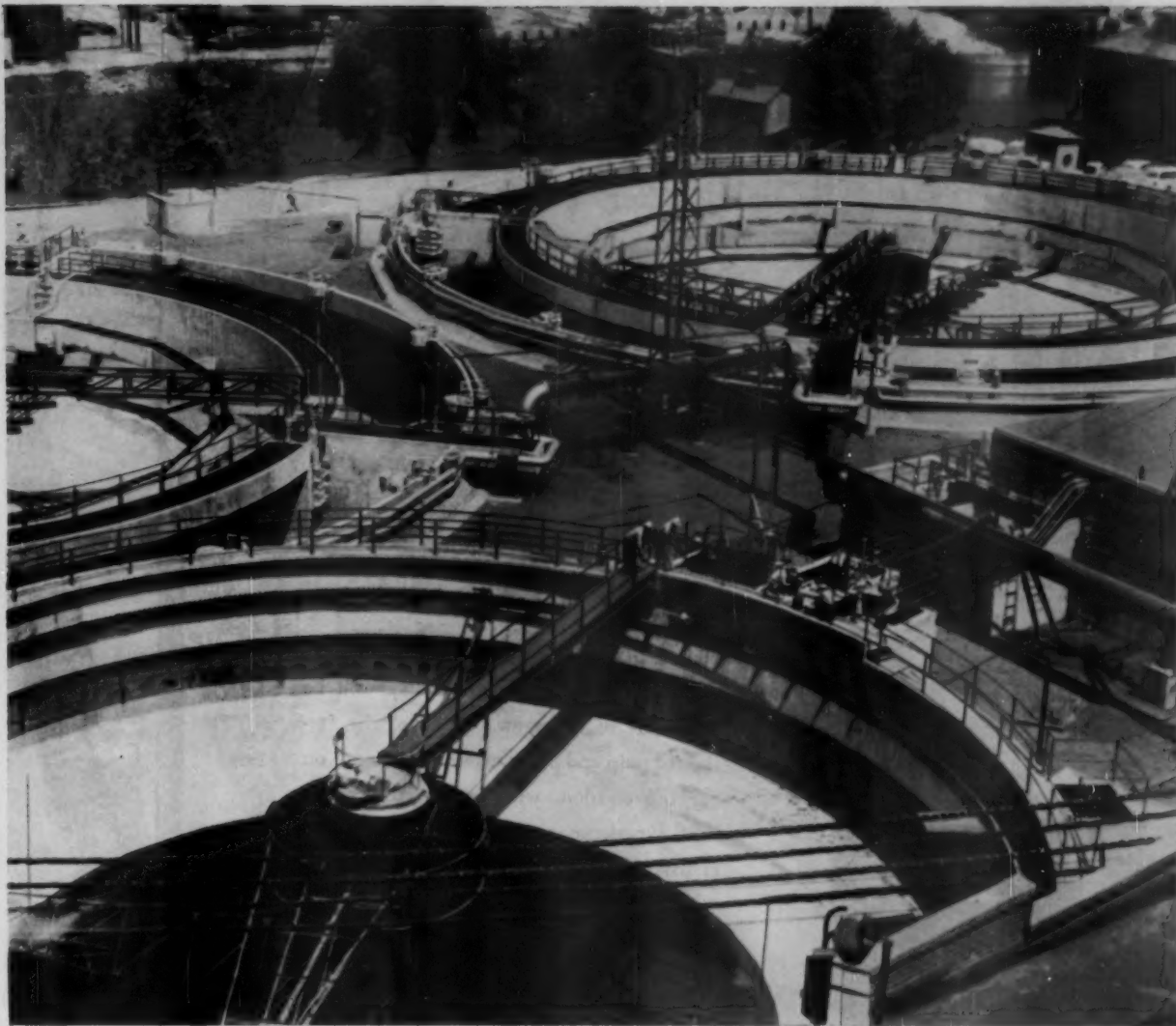
throughout all phases of the project. The firm of Weston, Eckenfelder and Hood was also called in to make an intensive round-the-clock analysis of pilot plant results.

The flowsheet as developed is unique. Basically it employs the activated sludge process, one of the standard methods for treating municipal sewage. A departure from standard practice is the addition of certain nutrients essential to the life of the bacteria

which carry out the treatment process. Another is split treatment providing primary sedimentation for the portion of mill wastes containing solids and then parallel aeration and final sedimentation for the entire flow. A third is the use of complete instrumentation with one control panel governing the process and recording results.

Average treatment plant design is 16 MGD with a maximum capacity of 25 MGD. Major





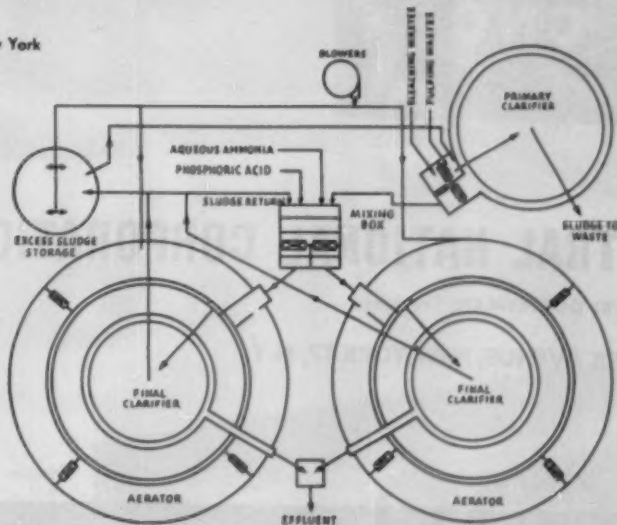
General view of the plant during final stages of construction. Dorr Primary Thickener is in foreground with Currie Clarifiers in rear.

Consulting Engineers: GIBBS & HILL, INC., New York, New York

equipment units include a Dorr Primary Thickener and two Currie Clarifiers.* These latter units employ Dorr Final Clarifiers surrounded by annular aeration channels. In this way two distinct phases are carried out in a single unit. When the plant reaches full operation an estimated BOD reduction of 80-90% will be made in the mill effluent being discharged to the Jackson River.

**Dorr-Oliver Incorporated,
Stamford, Conn.**

*Trademark, Reg. U. S. Pat. Off.



PAPER EXPORT

CNC

"A merchant of great traffic through
the world."

SHAKESPEARE

New markets mean new sales . . . and the most promising new markets may well be thousands of miles away. That's why far-sighted pulp and paper manufacturers call on our organization, with its special overseas skill, experience, and contacts—and join the merchants "of great traffic" throughout the world.

PULP EXPORT

CNC

CENTRAL NATIONAL CORPORATION

D. SAMUEL GOTTESMAN, President

100 PARK AVENUE, NEW YORK 17, N.Y.



**PULP &
PAPER**

WORLD PAPER TRENDS

• **SUPERCALENDERING** at St. Regis 325-tons-a-day enamel coated and uncoated printing papers mill, Kalamazoo, Mich., U.S.

For 66% of world's population, in liberty-loving countries, annual per capita use of paper is 58.2 lbs. But behind Iron and Bamboo curtains, each subject has only 10.4 lbs. This could decide ultimate victory.

Free Nations Make 92% of All Paper,

(Copyright, 1955, by PULP & PAPER)

● Again, in this World Review Number, PULP & PAPER presents its unique, detailed comparison of "the strength" of the Free World versus the Red World.

This year it is measured not only by their production and consumption of paper and paperboard, but also their production of all kinds of pulp—not only woodpulp, which is discussed in the preceding section.

Is it important to compare the strengths of Free and Red World in paper, paperboard and pulp? It is inconceivable that either a cold war, or a hot one, could be won without these essential commodities. Governments, at war, have proclaimed these commodities as essentials with highest priorities. More pulp and paper is used by man than any other basic commodity, except water. It is the "life blood of civilization"—"the pacemaker of progress."

The highest quality pulps are used to make the powder that fires guns, the sturdiest tire cord for air force and land vehicles, all kinds of plastics, cellophane, rayon and acetate textiles, etc. Paper has a thousand and one uses—from the general's maps to the civilian's newspapers. Paperboard is used to make the famed V-boxes, containers for shipments, anything and everything, into the tropics or the arctic zones.

PULP & PAPER's first Free World vs. Red World paper statistics were presented in last year's World Review. The facts that were revealed in that first complete nation-by-nation comparison of its kind, were reprinted in newspapers from the *New York Times* to small town papers, and publications all over the world.

Now, again, with new figures on production and per capita consumption, PULP & PAPER shows the new lineup of pulp and paper "strength."

This is based on new reports received in 1955 direct from many paper company executives, association secretaries, industry editors, government officials and others in close to 50 different countries or territories. These were sent exclusively, for the most part, to PULP & PAPER, and are the very latest, on-the-spot information.

Here's what the record shows:

THE WHOLE WORLD:

Paper and Paperboard Production:

1953 52,332,881 short tons.
1954 57,426,403 short tons.

All Kinds of Pulp—Production:

1954 46,179,590 short tons.

THE FREE WORLD:

Paper and Paperboard Production:

1953 48,631,881 short tons.
1954 52,945,103 short tons.

All Kinds of Pulp—Production:

1954 42,475,790 short tons.

THE COMMUNIST WORLD:

Paper and Paperboard Production:

1953 3,701,000 short tons.

1954 4,481,300 short tons.

All Kinds of Pulp—Production:

1954 3,703,000 short tons.

These figures reveal that 92% of the whole world's paper and paperboard is made in the Free World although it only has two-thirds of world's population. It is also a net exporter and the Red World is a net importer, but this involves only a couple hundred thousand tons at the most, going mostly from border countries into the Communist countries.

In the matter of pulp—woodpulp, straw, bamboo, esparto, etc.—the Free World likewise makes about 92%. This pulp not only goes into paper

and board, but also into gunpowder, rayon, acetate, cellophane, etc.

PULP & PAPER's direct reports, as was the case last year, are the most complete ever gathered for this industry. The breakdown by countries is seen on tables in this section.

PULP & PAPER's 1954 total for the world's paper and board output—57,426,403 short tons—comes mighty close to an estimate issued by American Paper & Pulp Association (P&P's figure is 826,403 tons higher.). Twice in recent years, that body has estimated world production, as follows:
1950 46,955,464 short tons.
1954 56,600,000 short tons.

In some countries, some heavy fiberboard or pulpboard figures were included in PULP & PAPER's statistics; however, in other countries it is known that such figures were not included. In any case, they would account for only small discrepancies, tonnage-wise.

PULP & PAPER's "all pulp" figures include most straw pulp, bamboo, esparto grass, sugar cane bagasse and other fibrous pulps, but do not include papermaking stock produced from reclaimed or waste paper. In some countries, all agricultural fibrous pulp figures were not given, but this would add very little to the total.

It is evident in comparing these statistics with those issued by the U.S. Pulp Producers Association-Canadian Pulp & Paper Association, that trees are virtually the entire raw material source for pulp, because fiber is far more plentiful and economic when it comes from trees.

In the preceding section of this issue, on world pulp trends, the USPPA-CP&PA statistics show they calculated 41,741,000 short tons of woodpulp made in the Free World. PULP & PAPER's figure for all pulp made in Free World is 42,475,790.

The Free World—Paper and Paperboard and All Pulp Production

Also Per Capita Consumption of Paper and Paperboard

Compiled from direct reports from some 50 countries to PULP & PAPER
and other available statistics

PAPER and PAPERBOARD STATISTICS

Board and Pulp

WHAT PER CAPITA FIGURES REVEAL—An illuminating comparison of the Free vs. Communist World is revealed by figures for per capita paper-paperboard consumption.

Even allowing for slight net imports of a few hundred thousand tons in the Red World—more paper and paperboard goes through the Iron and Bamboo Curtains than comes out—here is PULP & PAPER's calculation of the average amount of paper and board used by each individual man:

IN THE RED WORLD . . . 10.4 lbs.
IN THE FREE WORLD . . 58.2 lbs.
IN THE WHOLE WORLD 42.3 lbs.

This is prima facie evidence of why there is a Free World and a Communist World. Some scholars may point to the per capita figures as a cause; others, as an effect. Probably, both are right. The Free World is still Free, primarily because its degree of civilization, its literacy, its general living standards are so clearly dependent on its abundant supply of this basic commodity, paper. Every free man in this world uses an average of 58 lbs. a day, more than five times what subjects of the Communist World have for their use.

PULP & PAPER's per capita figures show a change from 1953. In our report published a year ago, the per capita figures were higher in the Free World—67 lbs., and lower in the Red World—nearly 8 lbs., and the worldwide average was about the same 43 lbs. Population growth, more production, net exports, better statistics—all these factors could be explanations of this.

In the United States, where population is increasing rapidly, per capita consumption was 383.7 lbs., just a little off past records. The U.S.A. consumes much more paper and board than it produces. Its production was

Country	Population	Per Capita Consumption in 1954* (in lbs.)	1953 Production (short tons)	1954 Production (short tons)	1954 Pulp Production (short tons)
United States	162,400,000	383.7	26,458,000	26,656,631	18,341,175
Canada	14,000,000	280.3	7,266,000	7,642,000	9,396,467
Argentina	19,000,000	44	191,925	251,511	58,000
Brazil	57,350,000	19	330,000	379,000	201,000
Chile	6,000,000	22	52,500	57,187	24,408
Colombia	11,300,000	12	15,000	25,000	none
Cuba	5,500,000	57	35,000	37,300	none
Mexico	28,000,000	17.3	201,000	207,000	96,000
Peru	8,714,000	7	24,500	27,500	13,000
Uruguay	2,360,000	50	22,000	35,000	6,000
Venezuela	5,300,000	25	10,000	8,800	none
Bolivia	3,100,000	2	800	800	none
Costa Rica	890,000	10	1,400	3,000	none
Paraguay	1,500,000	2	450	450	none
Guatemala	3,000,000	4	500	9,000	7,000
Rest of America	23,000,000	2	1,000	1,200	none
Sweden	7,200,000	200	1,348,000	1,536,000	3,971,000
Finland	4,200,000	124	1,156,000	1,215,000	2,660,000
Norway	3,343,000	143	501,000	625,900	1,357,000
West Germany	51,752,000	109	2,170,000	2,537,088	1,389,466
Britain	50,784,000	164	1,668,300	3,391,000	157,969
France	43,000,000	84	1,573,000	1,778,600	784,300
Belgium	8,800,000	108	307,833	334,932	110,660
Netherlands	10,426,000	105	724,000	870,000	510,000
Ireland	2,933,000	59.8	40,000	58,300	9,000
Austria	7,100,000	69	394,000	486,900	560,927
Italy	49,000,000	35	731,500	812,184	340,006
Yugoslavia	16,850,000	11	70,000	73,195	69,498
Denmark	4,400,000	140	135,000	138,000	4,070
Portugal	8,500,000	16.8	41,000	48,700	45,000
Greece	7,650,000	15	28,000	30,000	none
Switzerland	4,850,000	141	280,000	341,000	193,000
Spain	28,863,182	17	160,000	279,811	175,545
Turkey	22,500,000	5.7	32,600	42,020	30,030
India	380,000,000	1.9	152,023	173,967	30,800
Japan	87,003,000	46.8	1,941,000	2,118,711	1,790,895
Philippines	21,643,000	10	8,000	10,600	5,020
Taiwan	8,749,151	13.2	38,500	47,604	18,538
Israel	1,800,000	9	500	8,250	none
Pakistan	76,000,000	2	10,000	20,000	none
Hawaii	500,000	166	35,000	40,000	40,000
Indonesia	76,500,000	3.5	2,200	7,000	none
Burma	18,859,000	1.3	500	1,000	none
Ceylon	8,105,000	3.7	500	1,000	1,000
Thailand	19,000,000	2.2	1,500	3,000	none
Cambodia-Laos-					
Viet-Nam	30,000,000	2		1,000	none
Rest of Asia	200,000,000	2	1,000	2,000	none
Australia	9,090,000	130	270,000	330,000	157,400
New Zealand	2,100,000	104	35,000	45,106	81,616
Egypt	22,000,000	11	25,650	25,850	none
South Africa	13,000,000	34	61,000	90,000	41,000
North Africa	60,000,000	11	44,000	50,000	30,000
Middle Africa	92,000,000	2	15,000	30,000	none
All Free World	1,809,914,333	58.2	48,631,881	52,945,103	42,475,790
**Whole World	2,714,978,333	42.3	52,332,881	57,426,403	46,179,590

* Per capita consumption is calculated on a basis of imports and exports, as well as production. For available imports and exports data see sections on individual countries in this WORLD REVIEW.

** For statistics on RED WORLD, see next page.

26,650,000 tons, but consumption—adding mostly imported Canadian newsprint, and deducting heavier exports than in past years—ran some 5,000,000 tons higher. U.S.A. consumes about 60% of all the world's production.

WORLD'S LEADERS IN PER CAPITA USE—Leading nations in per capita paper-paperboard consumption:

	Lbs. per person
1. U.S.A.	383.7
2. Canada	280.3
3. Sweden	200
4. Britain	164
5. Norway	143
6. Switzerland	141
7. Denmark	140
8. Australia	130
9. Finland	124
10. West Germany	109

In the Red World, East Germany and Rumania lead with 45 each. In Poland, each person uses only 35 lbs. a year, in Russia, 25, and in Red China, only 1.6 lbs per man.

In Latin America, Cuba is the leader, 57 lbs. per person. Uruguay is next with 50, then comes Argentina, with 44. New Zealand with 104, Japan with 46.8, and several other countries rank higher than the highest in the Red World.

If some countries only doubled or tripled their very low per capita figures, fantastically increased supplies of pulp and paper would be needed.

HOW NATIONS RANK IN PAPER PRODUCTION—In paper and board production, 1954, here are the leaders:

	Short tons
1. U.S.A.	26,656,631
2. Canada	7,642,000
3. Britain	3,391,000
4. West Germany	2,537,088
5. Russia	2,200,000
6. Japan	2,118,711
7. France	1,778,600
8. Sweden	1,536,000
9. Finland	1,215,000
10. Netherlands	870,000

A Chance For Bachelors

Wünsche für meine Tochter

(einziges Kind), 26 Jahre, evang., hübsche Erziehung, intelligent und naturliebend, einen gleichwertigen Partner. Evtl. Ehelicheit in meinen Papier- und Pappengroßhandel im südd. Raum. Haus- u. Grundbesitz vorhanden. Nur ernstgemeinte Zuschriften mit Bild und genauen Angaben über eigene Person unter PR 27 675 an APR Ffm.-16, Untermaindall 62

"Here's a chance for the bachelors," is the way that Dr. L. E. Wise, head of the wood chemistry group, Institute of Paper Chemistry, Appleton, Wis., U. S. A., described this advertisement which he found in *Allemeine Papier-Rundschau* 1955, No. 8:384:

The "Red" World—Pulp and Paper "Strength"

PAPER and PAPERBOARD STATISTICS

Country	Population	Per Capita Consumption in 1954* (in lbs.)	1953 Production (short tons)	1954 Production (short tons)	Production of All Kinds of Pulp 1954 (short tons)
Russia	197,000,000	25	1,581,000	2,200,000	2,000,000
Red China	601,000,000	1.6	400,000	500,000	170,000
East Germany	17,314,000	45	679,000	660,000	700,000
Czechoslovakia	13,000,000	40	467,000	470,000	490,000
Poland	26,000,000	35	360,000	400,000	200,000
Rumania	17,000,000	45	132,000	132,000	127,000
Hungary	10,000,000	15	55,000	83,100	8,000
Bulgaria	7,250,000	45	25,000	30,000	6,000
North Korea	4,500,000	2	5,000	5,000	2,500
Red Indochina	12,000,000	0.7	1,000	1,200	none
Total	905,064,000	10.4	3,706,000	4,481,300	3,703,800

*Per capita consumption is calculated on basis of imports and exports, as well as production. For available imports and exports data, see sections in this *WORLD REVIEW* on individual countries.

Next in order: 11-Italy, 12-East Germany, 13-Norway, 14-Red China, 15-Austria, 16-Czechoslovakia, 17-Brazil, 18-Poland, 19-Switzerland, 20-Belgium, 21-Australia, 22-Spain, 23-Argentina, 24-Mexico, 25-India. Their production figures are shown in the tables.

Britain, leading the economic boom in Europe, climbed over West Germany and Japan, to move from 5th to 3rd. Russia apparently is virtually neck and neck with Japan. Netherlands includes in its total about 400,000 tons of strawboard.

Brazil leads Latin America. But a surprise is how India has climbed into 25th place. It is striving to build its paper production, hopes to be an exporter.

HOW NATIONS RANK AS PULP PRODUCERS—In all pulp production, these are the leaders:

	Short tons
1. U.S.A.	18,341,175
2. Canada	9,396,467
3. Sweden	3,971,000
4. Finland	2,660,000
5. Russia	2,000,000
6. Japan	1,790,895
7. West Germany	1,389,000
8. Norway	1,357,000
9. France	784,300
10. East Germany	700,000

Next in order: 11-Austria, 12-Netherlands, 13-Czechoslovakia, 14-Italy, 15-Brazil, 16-Poland, 17-Switzerland, 18-Spain, 19-Britain, 20-Australia, 21-Rumania, 22-Belgium, 23-Mexico, 24-New Zealand, 25-Argentina.

Pulp and paper is the No. 1 industry in Canada, its only billion dollar

industry, producing more wealth than all its minerals. In the U.S.A. it is the No. 4 industry, and 3rd fastest growing. In Finland and in New Zealand it is ranked as No. 4 and must be that high or higher in Scandinavia and perhaps other countries.

Enough facts and figures could be marshalled, no doubt, to show that it is the strongest single material weapon that the Free World has to defend itself. On the other hand, its low stature in the Communist World might yet prove the biggest factor in its undoing.

World Newsprint Production (in short tons)

Country	1939	1954	1955
Canada	4,632,936	5,919,917	6,040,000
U.S.A.	972,000	1,280,000	1,425,000
Argentina	0	35,000	35,000
Brazil	10,000	45,000	45,000
Chile	11,000	20,000	20,000
Peru	0	15,000	15,000
Britain	1,100,000	705,000	730,000
Finland	611,000	569,000	730,000
Norway	231,528	232,000	228,000
Sweden	358,890	375,000	390,000
Austria	85,000	210,000	210,000
Belgium	78,000	66,000	66,000
France	356,550	375,000	380,000
German Republic	270,605	250,000	285,000
Netherlands	110,230	115,000	115,000
Portugal	2,000	3,000	3,000
Switzerland	40,000	66,000	66,000
Italy	85,450	150,000	160,000
Spain	40,000	50,000	50,000
Turkey	0	12,000	12,000
Yugoslavia	0	0	0
Egypt	0	5,000	5,000
Israel	0	15,000	15,000
India	0	0	30,000
China	26,900	50,000	50,000
Taiwan (Formosa) Incl. in Japan	9,000	9,000	10,000
Japan	450,000	562,000	595,000
South Korea Incl. in Japan	30,000	30,000	30,000
Australia	0	85,000	85,000
New Zealand	0	0	8,000
Sub-Total	9,691,169	11,306,917	11,869,000
Russian Bloc	723,420	927,000	927,000
World Total	10,414,589	12,233,917	12,796,000

Source: Newsprint Assn. of Canada



NORTH AMERICA

UNITED STATES OF AMERICA

New Production Records Will Be Set in 1955, Paper and Woodpulp Exports Climb to New Highs

Population: 162,400,000. Per capita paper consumption: 383.7 lbs.

Production (short tons)	1954	1953
All paper	26,656,631	26,458,781
Chemical woodpulp	13,583,162	13,012,636
Mechanical woodpulp	3,631,699	3,495,170
Semi-chemical woodpulp	1,126,314	1,028,721
Paper imports	5,189,006	5,231,358
Paper exports	686,428	475,990
Pulp imports	2,050,760	2,157,574
Pulp exports	438,542	161,687

Principal paper grades made: Container-board, book paper, coarse paper.

Principal paper imports from: Canada.

Principal pulp imports from: Canada, Sweden, Finland.

Principal paper exports to: Canada.

Principal pulp exports to: Britain, France, West Germany, Canada.

● Riding high on the crest of the greatest year in their history, the paper, paperboard and woodpulp industries of the United States are not just sitting still. They are reaching out with both hands for the biggest overseas and worldwide business they have ever enjoyed, and with every intention of making it a habit.

That drive for foreign business, coupled with definite programs to hang right on to that business when they get it, was the most significant single pulp and paper trend as the year 1955 moved past the half-way mark. Companies were announcing new or enlarged export divisions, they were sending salesmen hither and yon around this old globe, to sell not only woodpulp, but paper and board. The 1955 annual reports of company after company dwelt upon their export market, many of them already having set records in this department, and predicted they will double or greatly enlarge their income from newfound customers in Europe, Latin America, etc.

An economic boom in Europe was

making its best pre-war years look pallid by comparison. This was the biggest single force behind this export trend for American industry.

A "new awakening" of Latin America, encouraged by private North American financial interest and better payment guarantees, is another factor. The first of the Eisenhower Administration's new revised reciprocal agreements, lowering a long list of paper and other duties and providing mutual concessions aimed at stimulating trade, was signed with Japan. It is hoped this may prove a turning point for Japan, maybe even save it from Communism. Other reciprocal agreements are coming. But devalued currencies, more than tariffs and duties, were the real stumbling blocks to more international trade.

PRODUCTION RECORD WILL BE SET IN 1955—The United States paper industry is headed for a record production year in 1955. It could even hit the 28,000,000 tons mark by Dec. 31. Never before in history has it

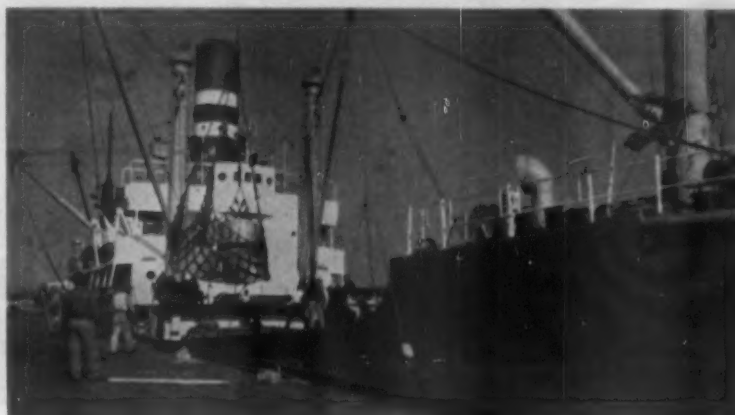
touched as high as the 26.7 million mark. Paperboard mills reached a pace of 99% and 100% capacity in early summer weeks, and at mid-1955 had set a new 6-months record of 6,862,418 tons (previous record was 6,404,377 in first half of 1953). Paper mills were running at 96% to 98%.

Production for the first 5 months was 10% over 1954. Here are some comparisons and forecasts for the future:

Year	U.S.A. Production Short Tons
1939	13,509,642
1942	17,083,862
1950	24,377,222
1951	26,086,115
1952	24,413,212
1953	26,458,781
1954	26,656,631
1955	near 28,000,000
*1960	32,000,000
*1965	36,900,000
*1970	41,600,000
*1975	46,600,000

* Forecasts by Stanford Research Institute on basis of population growth, technological advances and competition of materials.

The year 1952, like 1949, was a year in which production dropped off about 1,500,000 tons. Can the indus-



U.S. Paper Exports are Breaking All-Time Records

U.S. paper and board exports broke all-time records in 1954, and this year were headed for a new record. Paper exports were up 96%; board up 36%. This picture shows S.S. Lake Charles, at Savannah, Ga., U.S.A., loading Union Bag & Paper Corp. board for Cuba. Union Bag's overseas exports have increased several hundred percent since 1950!

try expect slight recessions of that type in 1956, or years to come, or is it now going to steadily climb to that 32,000,000 tons mark predicted for 1960? But no one was dwelling on that thought very long in 1955!

EVERY AMERICAN USES OVER 1 LB. PER DAY—Consumption of paper and paperboard within the United States totaled 31,146,213 short tons in 1954, just shading the record of 31,332,952 in 1954. Reason—less imports, more exports. But this is just twice what consumption was in 1939. The U.S.A. consumes about 60% of all the paper made in the world today yet it holds only 6% of the population.

As the population of the United States climbed to 165,000,000 by June 1, 1955, every American was averaging more than 1 lb. of paper used per day! Per capita consumption for the U.S. population of 162,400,000 at the end of 1954 was 383.7 lbs. for that year. This also just shaded the all-time records of 396.6 and 392.4, in 1951 and 1953, respectively. But what a change from 1899, when the much smaller population was using only 58 lbs. per person, or 1939, when it consumed only 244 lbs.! The rate today is many times that of most other countries, twice as high as any outside of Canada.

1950 FORECAST MAY PROVE TRUE—Over five years ago, on the basis of past population and per capita consumption trends, Prof. John A. Guthrie, Washington State College (see PULP & PAPER 1950 Review Number, p. 62) predicted consumption of 31,700,000 tons this year, 1955 (only 553,000 tons over 1954). He forecast a per capita consumption of 409 lbs. per person.

Dr. Guthrie is going to come very



Helping U.S.A. Set Production Records

This 230-in. Beloit kraft Fourdrinier at St. Regis Paper Co.'s Jacksonville, Fla., mill, is typical of some of U.S. machines which are setting speed records. Prolonged runs above 2,000 fpm were reached on repeated occasions with reports that better than 2100 fpm were attained for 13 hours. A second machine will be built alongside this one, expected to make fabulous amount of over 1,000 tons per day.

TRENDS IN U.S.A. INDUSTRY—1955 VS. 1954 First Four Months of Each Year

	1954	1955	Percent Change 1955 vs. 1954
PULPWOOD (Cords)			
Receipts	9,073,056	10,353,503	+ 14
Consumption	9,422,183	10,808,116	+ 15
Inventory, April 30th	5,288,140	4,786,749	- 9
WASTE PAPER (Tons)			
Receipts	2,654,902	2,826,188	+ 6
Consumption	2,672,181	2,882,298	+ 8
Inventory, April 30th	462,590	403,924	- 13
PAPER AND BOARD (Tons)			
Total Production	8,694,958	9,627,670	+ 11
Paper Production	4,290,144	4,674,671	+ 9
Board Production	4,404,814	4,952,999	+ 12
TOTAL WOOD PULP (Tons)			
Production	5,910,641	6,713,392	+ 14
Imports	648,240	677,583	+ 5
Exports	85,091	214,190	+152
New Supply	6,473,790	7,176,785	+ 11
Consumption in Paper & Board	6,202,331	6,914,500	+ 11
Inventory, April 30th	655,710	636,268	- 3
At Pulp Mills	159,178	154,854	- 3
At Paper & Pulp Mills	496,532	481,414	- 3
MARKET WOOD PULP (Tons)			
Production	651,248	906,535	+ 39
Imports	464,796	495,633	+ 7
From Canada	349,770	388,124	+ 11
From Europe	115,026	107,509	- 7

—Source—U.S. Pulp Producers Assn., Inc.

close to his marks. He used the same forecasting technique as did Charles W. Boyce, then secretary of the American Paper & Pulp Assn., back in 1931, whose predictions were also published in PULP & PAPER. During pre-war peace years, Mr. Boyce's calculations worked out nicely; he hadn't figured on the "big push" during wartime.

Now Stanford Research Institute has completed an extensive research and, by more elaborate methods, has predicted a per capita consumption of 452 lbs. by 1965 and a 47% increase in paper and board total consumption (1952 to 1965).

SHOULD MILLS INCREASE BY 50%?—It stands to reason, then, that

any paper or board company in America, which (1) endorses the Institute's findings, and (2) believes it will retain its present share of business, must expand by close to 50% over its 1952 capacities.

The Institute predicts consumption of paper alone will reach 28,000,000 tons in the U.S.A. by 1975, and of paperboard alone, 24,900,000. Total consumption would be 52,900,000 tons. Heavy imports of newsprint from Canada will continue, the Institute said. It predicted this country would be a net importer of 6,300,000 tons by 1975. In 1954 it was a net importer of 4,503,000 tons, as compared with 4,750,000 in 1953.

The Institute forecast woodpulp consumption in U.S. will double by 1975, to 36,100,000 tons, with 1,800,000 going into rayon, acetate, plastics, and other non-paper uses. More bleaching and more white pulps are predicted. The Institute said pulpwood resources in every area of U.S. will increase, but mostly in the South. It forecast a doubling of the South's pulpwood production to more than 30,000,000 cords a year.

NEW EXPORT RECORDS—Getting back to exports, 439,000 tons of American woodpulp and 686,000 tons of American paper crossed frontiers in 1954. Paper exports were up nearly 50% from the year before and broke the all-time record of 634,300 tons in 1951. Pulp exports were a record for a normal peace year. But both were still climbing higher in 1955. In 5 months of 1955, pulp exports were up 172% over the same 1954 period,



One of South's Big Mills—24 Hours a Day Operation

This is Champion Paper & Fibre Co.'s Texas Division (Pasadena, Tex.), which has added chlorine dioxide bleaching to its process, and makes up to 440 tons or more per day of coated

book and other paper and paperboard. It sometimes exports its kraft pulp overseas. Makes bleached sodium and hydrogen peroxide bleached groundwood, too.

paper exports were up 93%, and board, 46%.

U.S.A. woodpulp production also broke all records in 1954, totalling 18,348,000 tons, which was 810,000 tons over the short-lived 1953 record. In the first 5 months of 1955, it was 8,523,000 tons, 1,100,000 over the 1954 period.

WHERE STATES RANK—Washington state is still the No. 1 woodpulp state by a substantial margin, on the basis of latest available breakdowns (1953). Florida and Louisiana are second and third, respectively, about 500,000 and 700,000 tons behind. But Georgia has passed Maine to take 4th place and Mississippi passed Wisconsin to take 6th. Ten to 15 years ago Maine was riding in second place and before that was first.

In paper production, latest comparisons go back to 1952—New York leading with 1,735,000 tons, and Wisconsin, Michigan, Louisiana and Pennsylvania following closely in that order. About 50 years ago Massachusetts was the consistent leader.

For interesting data on past records, in paper, board, woodpulp and pulpwood, see the tables on the following pages. These have been specially selected, arranged and maintained, year after year, in these World Review Numbers as the most useful and most instructive statistics on the American industry.

WHAT'S HAPPENING THIS YEAR—

In the first three months of this year, both Canada and U.S.A. were heading for new newsprint production records.

March, 1955 was the biggest newsprint month in history for both countries; in U.S. it was highest since May, 1928. In both countries newsprint production was being stepped up, with no less than seven new machines being built—for Bowaters and International Paper in the U.S. and for MacMillan & Bloedel, Great Lakes, Elk Falls (Crown Zellerbach Canada), Ontario & Minnesota (Kenora) and Powell River.

About 30 new paper machines were on order for U.S.A. mills. There were still three tissue machines, actually

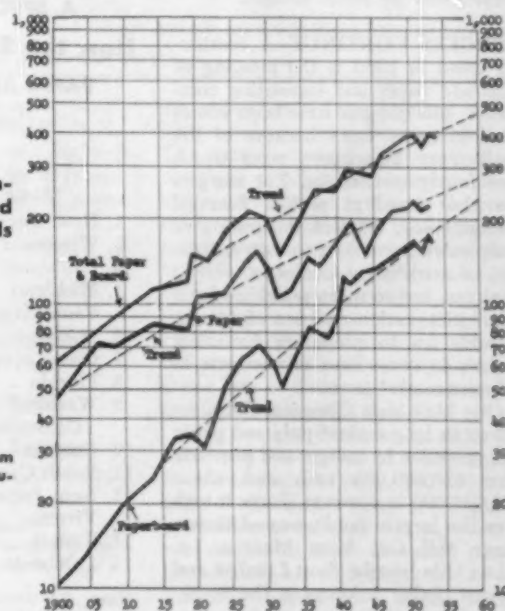
ordered or definitely planned, but not yet announced when this issue went to press, two for West Coast and one for Midwest.

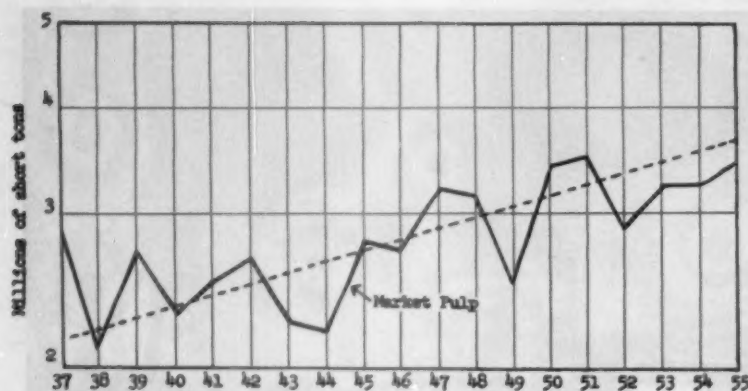
All the U.S. mills were spending close to half a billion dollars for improvements, additions or entirely new plants in 1955. There seemed no let-up in sight for expansion through 1956.

President Don Leslie (Hammermill) of American Paper & Pulp Association said in 1955 that the U.S. pulp and paper industry has attained No. 4 position among American industries.

U.S.A. Annual Consumption of Paper and Paperboard in Pounds per Capita

(by PULP & PAPER from APPA, USPPA & Census Bureau data)





Total Available Market Pulp in U.S.A.—All Grades, 1937-1955
(by PULP & PAPER, on data from producers)

He also said, with its renewable resource in the forests, it could conceivably become the No. 1 industry in the years ahead. It is rated in a news magazine survey as the third fastest growing industry in America. Sales are close to \$9,000,000,000 a year, with earnings close to 8%. They were six times the dollar record of 1939.

It is now estimated that over 10% of all the U.S. economy is based upon pulpwood and its products. The American mills own over 25,000,000 acres of well-managed timberlands (so acclaimed by U. S. government foresters) but its longterm consumption of wood is dovetailed with planned use of wood harvested off government acreage and by small lot owners.

The U. S. Government owns one-fourth of all the land in the U.S.A., majority percentages in six western states, and this includes vast forests, many hundreds of miles being destroyed now by insect ravages.

MERGERS CONTINUE—A continuing trend in 1955 is the merging of pulp and paper and converting companies. The mergers have been stimulated in many cases because of the confiscatory inheritance taxes which face family ownerships. But mergers are also aimed at mutual financial strengthening, efficient integration of complementary operations, diversification of markets by locales as well as products, and to make possible longer term conservation and use of forests. It adds up to preparing for slack periods in some lines or products or different market areas.

Olin Mathieson Chemical Corp. acquired its long-desired pulp and paper mill operation by merger and purchase—for \$50,000,000 cash and about \$40,000,000 in common shares it took over the largely family-owned Brown Paper Mill Co., West Monroe, La. When Olin bought Frost Lumber and its vast timber holdings in the Southwest, it was planning to go into mar-

ket woodpulp production, also to supply its own cellulose needs for its cellophane, paper (Ecusta) and ammunition manufactures. With Brown, it doubles its timber lands to 900,000 acres.

HOW COMPANIES NOW RANK—International Paper Co., No. 1 industry in America, took over Brown Corp. of Canada, and, more recently, also a Canadian container converting company. I.P.'s sales record last year was \$683,000,000.

Crown Zellerbach Corp., No. 2 company and by far the biggest in the West, acquired its first mill in the South—Gaylord Container Corp.—the "College of Southern Paper Makers Industry" because so many industry men were trained there. Their combined sales last year were about \$390,000,000.

Kimberly-Clark Corp. moved up

into No. 3 spot as a result of its merger with the company that had been its best customer—International Cellucotton Products, which has been expanding in England and South Africa. Combined sales in 1954 were \$322,500,000.

St. Regis Paper Co., No. 4 company, announced two mergers with converting operations, diversifying its far-flung activities even more. First, it took in Pollock Paper of Texas, \$35,000,000 sales, and then General Container Corp., Cleveland, O., \$23,000,000 sales in 1954 to add to St. Regis's \$200,000,000, total, \$258,000,000.

Fast-growing Scott Paper Co. is No. 5 in the American industry, having acquired Hollingsworth & Whitney and also Detroit Sulphite & Paper, as well as an interest in Westminster Paper. Combined sales in 1954 were about \$230,000,000.

Container Corp. of America ranks as No. 6, with \$186,600,000 sales. It merged with Traver Corp. (giving it plastics).

No. 7, West Virginia Pulp & Paper, expanding in Canada and in a small way, in Brazil, after its merger with Hinde & Dauch Co., had 1954 sales of \$164,843,000. This company has a long-term expansion charted to invest \$100,000,000 in mills.

Robert Gair's merger with Southern Advance and Great Southern Box Cos. should total sales near \$150,000,000.

Weyerhaeuser Timber Co. cannot be fairly ranked with the pulp and paper companies, because while its pulp and paperboard business has now grown to the point where it is one-

A SPECIAL FEATURE OF EVERY WORLD REVIEW NUMBER

How the States Rank in Paper and Woodpulp Production

PAPER AND BOARD—1952

(latest available)

State	Production (tons)	Percent of U.S.	
		Total	
1. New York	1,735,638	7.1	
2. Wisconsin	1,639,631	6.7	
3. Louisiana	1,522,006	6.2	
4. Michigan	1,462,602	6.1	
5. Pennsylvania	1,408,635	5.8	
6. Maine	1,371,967	5.6	
7. Ohio	1,358,524	5.5	
8. Florida	1,255,989	5.2	
9. Washington, Idaho, Colorado	1,142,873	4.7	
10. Georgia	1,010,430	4.2	
11. South Carolina ..	937,130	3.8	
12. New Jersey	923,486	3.8	
13. Virginia	784,197	3.2	
14. Illinois	760,771	3.1	
15. California	758,597	3.1	

WOODPULP—1953

(latest available)

State	Production (tons)	Percent of U.S.	
		Total	
1. Washington ...	2,158,318	12.3	
2. Florida	1,675,065	9.5	
3. Louisiana	1,480,229	8.4	
4. Georgia	1,372,386	7.8	
5. Maine	1,226,213	6.9	
6. Mississippi ...	1,098,434	6.2	
7. Wisconsin	1,073,017	6.1	
8. No. Carolina ..	838,366	4.7	
9. Virginia	817,330	4.6	
10. Oregon	650,007	3.7	
11. New York	585,113	3.3	
12. Pennsylvania ..	380,047	2.1	
13. Michigan	280,931	1.6	
14. New Jersey ..	81,582	0.8	
15. Ohio	69,703	0.4	
16. Illinois	60,519	0.3	

Note: To avoid disclosing production of individual mills, data for some states are not disclosed, or combined with other states.

third of its total, its big business is still lumber and plywood. Its sales—\$262,496,000, of which \$82,795,000 were pulp and paper.

Rayonier's merger with Alaska Pine & Cellulose will make their combined sales close to \$150,000,000, but here, too, a portion is in lumber as well as pulp. So is MacMillan & Bloedel's (Canadian) \$141,000,000 sales.

Others over the \$100,000,000 sales mark last year—Champion Paper & Fibre, Diamond Match, Marathon, Abitibi (Canadian), Mead Corp. and Union Bag.

Rejuvenated Newsprint Industry May Break 30-Year-Old Record

(Copyright 1955, by Pulp & Paper)

The newsprint industry, like the swallows of Capistrano, has come back to the U.S.A., according to data gathered by PULP & PAPER. This does not mean that the industry, which fled to Canada 30 years ago, has forsaken Canadian hospitality, but rather that other factors, both in Canada and the U.S.A., combine to the profitable operations of newsprint manufacture, notably in the South.

Rising Canadian labor and freight costs and higher pulpwood prices, due to Canada's higher standard of living, have steadily raised that nation's newsprint prices. On the U.S. side, contributing factors were the successful use of Southern pine, ironically including successful trials of this pulp in Canadian newsprint mills. Even though newsprint comes into U.S.A. free (removal of tariff many years ago was a deliberately planned spur to Canadian production) the lower costs in the South, improved high speed newsprint machines and low transportation costs to growing Southern newspapers are among reasons for the return of the industry.

But through the years when many U.S.A. newsprint makers were convert-

COMPANIES PRODUCING NEWSPRINT IN U.S.A.

Especially prepared by PULP & PAPER

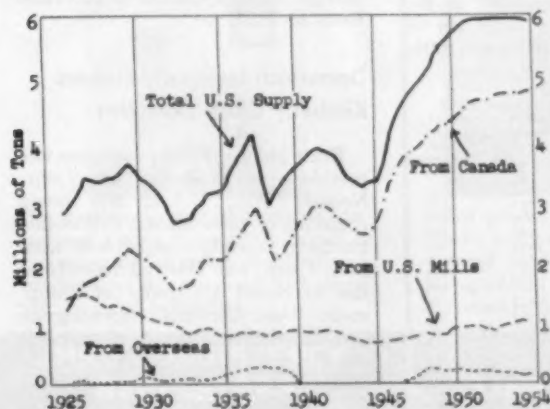
	1926	1946	1948	1952	1954	1955
	Tons, Estimated Capacity					
Alexandria Paper Co.	15,000	.....	.....	.....	.....	.....
Algonquin Paper Co.	29,000	.....	.....	.....	.....	.....
Blandin Paper Co.	22,000	.....	.....	.....	.....	.....
Bowaters Southern Paper Corp. ....	.....	.....	.....	70,000	135,000	.....
Cliff Paper Co.	13,000	.....	.....	.....	.....	.....
Consolidated Water P. & Pa.	102,000	.....	.....	.....	.....	.....
Coosa River Newsprint Co. ....	.....	.....	.....	115,000	120,000	130,000
Crown Zellerbach Corp.	174,000	200,000	190,000	210,000	215,000	210,000
Cushnoc Paper Co.	20,000	.....	.....	.....	.....	.....
De Grasse Paper Co.	56,000	.....	.....	.....	.....	.....
Dells Pulp & Paper Co.	12,000	.....	.....	.....	.....	.....
Escanaba Paper Co.	170,000	.....	.....	.....	.....	.....
Finch, Pruyn & Co.	44,000	10,000	.....	.....	.....	.....
Flambeau Paper Co.	14,000	.....	14,000	.....	.....	.....
Gary Paper Mills, Inc. ....	.....	.....	.....	10,000	.....	.....
Gilman Paper Co.	17,000	.....	.....	.....	.....	.....
Gould Paper Co.	30,000	.....	.....	.....	.....	.....
Grandfather Falls Co.	11,000	.....	.....	.....	.....	.....
Great Northern Paper Co.	257,000	300,000	330,000	375,000	378,000	450,000
Great Western Paper Co.	20,000	.....	.....	.....	.....	.....
Hennepin Paper Co.	12,000	.....	.....	.....	.....	.....
High Falls Pulp & Paper	8,000	.....	.....	.....	.....	.....
Inland Empire Paper Co.	29,000	.....	17,000	20,000	22,000	22,000
International Paper Co.	323,000	.....	.....	.....	.....	.....
Maine Seaboard Paper Co. ....	.....	104,000	.....	.....	.....	.....
Manistique Pulp & Paper	20,000	.....	.....	25,000	15,000	7,000
Michigan Paper (plainwell) ....	.....	.....	15,000	.....	.....	.....
Minn. & Ontario Paper Co.	76,000	.....	.....	.....	.....	.....
Nekoosa-Edwards Paper	10,000	.....	.....	.....	.....	.....
Northwest Paper Co.	14,000	.....	.....	.....	.....	.....
Oswegatchi Paper Co.	16,000	.....	.....	.....	.....	.....
Oswego Falls Corp.	11,000	.....	.....	.....	.....	.....
Pacific Paperboard Co. ....	.....	.....	7,000	.....	.....	.....
Peavey Paper Mills ....	.....	.....	9,000	.....	.....	.....
Pejepscot Paper Co.	41,000	.....	29,000	35,000	35,000	35,000
Publishers Paper Co.	9,000	56,000	75,000	80,000	90,000	93,000
St. Croix Paper Co.	55,000	75,000	89,000	90,000	92,000	93,000
St. George Paper Co.	10,000	.....	.....	.....	.....	.....
St. Lawrence Paper Corp. ....	.....	.....	.....	30,000*	25,000	25,000
St. Regis Paper Co.	115,000	.....	.....	.....	.....	.....
Sheffield Paper Mills ....	.....	.....	10,000	.....	.....	.....
Sherman Paper Co.	16,000	.....	.....	.....	.....	.....
Southland Paper Mills ....	.....	55,000	97,000	135,000	137,000	140,000
Tidewater Paper Mills	32,000	.....	.....	.....	.....	.....
Watab Paper Co.	17,000	.....	.....	.....	.....	.....
Waterway Paper Prod. Co.	14,000	.....	.....	.....	.....	.....
West End Paper Co.	13,000	.....	.....	.....	.....	.....
West Tacoma Newsprint Co. ....	.....	.....	17,000	25,000	60,000	60,000
Wisconsin River Paper & Pulp	25,000	.....	.....	.....	.....	.....
TOTAL	1,739,000	820,000	899,000	1,150,000	1,259,000	1,400,000

* Former St. Regis mill at Norfolk, N. Y.

ing operations to other grades, Great Northern Paper Co., in New England, was rolling out newsprint as if nothing had happened. Insurance for its future are its new chemi-groundwood proc-

ess, utilization of New England hardwoods and new up-to-date equipment. This manufacturer makes more than one-third of all U.S. newsprint. The chemi-groundwood process is the pretreatment of hardwood logs prior to grinding and was developed at the State College of N.Y. at Syracuse. (A complete, mill-approved word and picture story was featured in PULP & PAPER's April, 1955 issue.) A 276 in. Beloit newsprint machine began operations late in 1954. A sister machine, 284 in., starts up this Fall.

U.S. newsprint history was made in 1954 with the start-up of the Bowater Southern Paper Corp., \$60,000,000 mill at Calhoun, Tenn. Newsprint production at this mill was reportedly sold out for 15 years. Bowater's plans in the South are to double capacity of this mill. Newsprint is being made there at the rate of 145,000 tons an-



U.S. NEWSPRINT SUPPLY:

In Total and By Sources

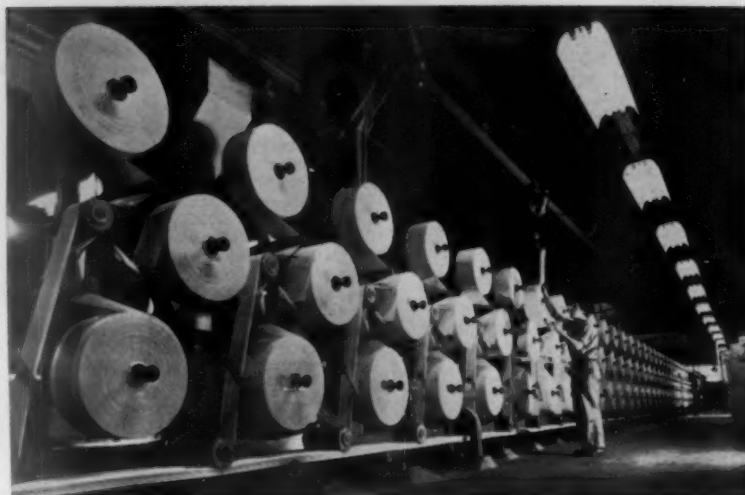
Source: Newsprint Assn. of Canada

nually. Output is scheduled to reach 175,000 tons a year, 270,000 tons by 1957. Bowater's No. 1 machine recently claimed a record of 2,118 fpm.

International Paper's first newsprint mill in the South is due for start-up next year at Mobile, Ala. The 282-in. Beloit Fourdrinier will make 300 tons a day. Coosa River Newsprint expects to embark soon on an expansion program. Southland Paper is adding a new Pusey & Jones newsprint machine.

Four new machines in the next year or two will increase U.S. potential by more than 300,000 tons so that 1957 capacity should fall just short of the all time high of 1,788,000 tons in 1927.

The estimated total of 1,400,000 tons to be made in 1955, in the data collected by PULP & PAPER, is within 1% of the Newsprint Service Bureau's estimate. The slight discrepancy is apparently due to variations in mill reports.



There Is a Trend Toward More Integration in U.S.A.

This is an operation in facial quality tissue converting in Crown Zellerbach's biggest mills at Camas, Wash., perhaps the biggest specialty mill in the world—700 tons a day of diversified products—15 machines and a variety of converting and finishing operations.

Paper and Fiber Use for Processed Foods

This report is an annual exclusive feature of this WORLD REVIEW NUMBER, prepared by Western Canner and Packer, a Miller Freeman publication and a companion journal of PULP & PAPER.

• Increases in the frozen foods and glassed foods divisions of the United States processed food industry appeared to be offset by decreases in canned foods, dried fruits and nuts in 1954, as compared with 1953, with apparently little change in the total consumption of fiber cases, cartons and fillers. But in the previous year, in frozen foods, particularly, there had been a remarkably big increase in use of fiber and paper packaging.

The accompanying table shows how paper and fiber packaged foods—dominating the frozen and food columns—still had the biggest share of the food pack.

Percentage wise, the increase in production of glassed foods was the greatest, going up 4%. Frozen foods,

which increased by the large amount of 19% in 1953, leveled off somewhat in the past year, but a 3% gain was recorded.

An increase of 28% in the amount of frozen juices packed was largely responsible for preventing a decline in the total amount of frozen fruits, vegetables and juices packed. Frozen fruits had declined by 4% and frozen vegetables by 12%. Other frozen foods continued to rise; went up 9% in 1954 over the 1953 pack.

Canned food producers cut back production slightly in 1954 although there were wide variations in many individual items. Canned juices, for example, were cut back 12% as compared with the 1953 pack. Canned fruits were reduced 10%. Canned vegetables were reduced only 2%.

Other types of canned foods, such as baby foods, pork-and-beans and other non-seasonal items, also were not packed in such quantity as the previous year. But the reduction of 2% was small and would mean little

difference in the amount of packaging materials used.

The decline of dried fruits and nut packs continued in 1954 and other dried foods, such as beans, were not packed in large enough amounts to prevent the entire industry from showing a 5% decline.

Usage of fiber packaging materials by the processed food business in 1954 closely followed the pattern of recent years. Cannery and glassed food packers continued to cater to the small family unit by stressing the smaller tin or jar sizes, and by assembling their packs in greater proportion in the 24-unit rather than the 48-unit or larger case. Dried fruit firms continued their promotion programs featuring the smaller consumer size packages. But as in the past, a large part of their products were packed in large containers destined for use by institutions and for re-processing.

The market and crop situations indicate there will not be any major change of the production of processed foods in 1955.

U. S. PROCESSED FOOD PACKS*

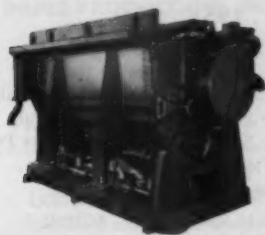
	Canned Foods (Million Cases)		Glassed Foods (Million Cases)	Dried Foods (Million Tons)		Frozen Foods (Million Pounds)		
	Fruits, Juices Vegetables	All Other Canned		Fruits, Vegetables and Nuts	Eggs, Milk	Fruits, Juices, Vegetables	Eggs, Fish, Specialties	
1936	173	136	79	1,227	122	92	279	
1939	191	160	85	1,529	151	213	360	
1941	264	223	114	1,675	229	319	484	
1943	284	180	188	2,390	455	496	659	
1945	321	235	233	1,672	483	749	699	
1946	370	235	235	1,762	484	985	717	
1947	311	244	240	1,879	464	729	668	
1948	300	255	207	1,909	448	1,041	677	
1949	308	245	186	1,891	568	1,171	664	
1950	328	261	225	1,511	549	1,412	716	
1951	373	265	230	1,724	430	1,636	735	
1952	350	265	245	1,623	460	1,941	720	
1953	372	269	266	1,674	NA	2,287	711	
1954**	347	264	276	1,595	NA	2,317	777	

* Source: WESTERN CANNER & PACKER, Miller Freeman Publ., affiliated with PULP & PAPER.

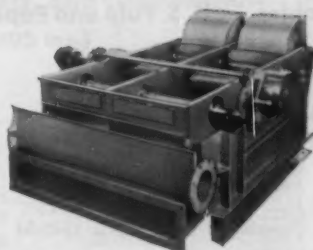
** Preliminary. NA: Not Available.

Darmstadt University Honors Kimberly-Clark Executive

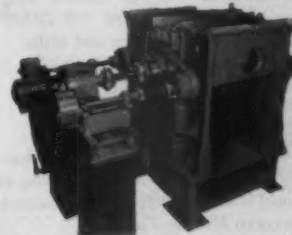
Ernst Mahler, former executive vice president of Kimberly-Clark Corp., Neenah, Wis., U.S.A., and board chairman of International Cellucotton Products, recently merged with Kimberly-Clark, was honored recently at the Technical University of Darmstadt, West Germany, receiving an honorary degree of doctor of engineering. He graduated from Darmstadt in 1912.



Standard throughout the papermaking world — the final barrier against dirt and guardian against damage to delicate machine wires,



For high capacity, low cost knotting and perforate plate screening of all kinds of pulp at high consistencies,

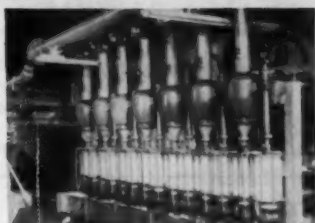


High efficiency slotted plate screening of big volumes of high consistency stocks in small space at low cost per ton means

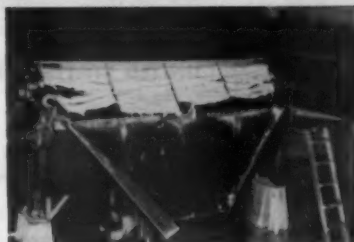
BIRD SCREENS

BIRD JONSSON SCREENS

BIRD VIBROTOR SCREENS



Available in regular or "king" size, the latter handling as much as 1200 gallons of stock per minute — equipped with automatic dirt evacuators when desired —



For recovery of paper stock from white water at lowest cost per ton, to save costly fibres, filler, color, water, time, labor and money,

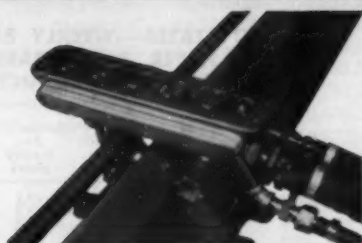


The accepted means of removing fine dirt, rubber or metal particles from photographic, condenser, glassine, cigarette and other special paper stocks,

DIRTECS

BIRD SAVE-ALLS

BIRD CENTRIFINERS



For keeping press felts continuously clean, fresh and absorbent without mid-week shutdowns, however wide and fast-running the felts,



Engineered to provide continuously effective roll performance and minimum roll maintenance expense — designed for quick blade change, oscillation or air lift as needed,

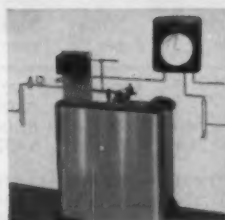


Self-cleaning or oscillating showers to provide utmost scouring efficiency with lowest water consumption,

VICKERY FELT CONDITIONERS

VICKERY DOCTORS

BIRD SHOWER PIPES



Pneumatic operated with remote control and a continuous chart record of incoming or outgoing consistencies, or mechanically operated with equal accuracy and reliability,



For producers of alkaline pulps who want a drier lime mud and a uniformly dried product delivered to the kilns regardless of variation in moisture content of the incoming feed,



For unwind, surface rewind and re-winding on continuous or sectional cores, here are lightweight, safety locking arbors that obsolete old style, heavy, wedge driven, butt end busting, core destroying arbors,

BIRD CONSISTENCY REGULATORS

BIRD LIME MUD FILTERS

BIRD CORLOCS

Write for complete information to BIRD MACHINE COMPANY, SOUTH WALPOLE, MASS.

Statistical Tables . . . U. S. Pulp and Paper Industry . . . 1955

Number of Companies and Mills	142	U.S. Fine Papers	144	Leading Woodpulp States	147
Wages and Industry Worth	142	U.S. Coarse Papers	144	U.S. Pulp Imports	147
U.S. Industry Statistics	142	U.S. All Other Paper	144	Regional Origin of Market Pulp	147
U.S. Industry Growth	142	U.S. Paperboard Statistics	144	U.S. Prices of Dissolving Pulp	148
U.S. Weekly Earnings	142	U.S. Paperboard Production	144	U.S. Prices of Cotton Linters Pulp	148
Total Paper Production by Grades	142	U.S. Board Production	146	Typical Pulp Prices in U.S.	148
U.S. Paper Production, Imports, etc.	143	U.S. Building Boards Production	146	PULPWOOD	
Basic U.S. Production and Consumption	143	U.S. Building Board (Sq. Ft.)	146	Pulpwood Statistics for U.S.	148
Average Hourly Earnings	143	Paperboard Mill Census 1945-54	146	Appalachian Area	148
Value of Sales in U.S. Industry	143	WOODPULP		Lake States	148
Production Workers and Wages	143	U.S. Imports of Woodpulp by Grades	146	Northeast States	148
Consumption of Waste Fibrous Materials	143	U.S. Woodpulp Imports from Europe	146	Pacific Coast	148
U.S. Newsprint Supply and Sources	143	U.S. Imports of North American Pulp	146	South	150
Newsprint Paper Consumption	144	Total U.S. Production of Woodpulp	147	Production Statistics for South	148
U.S. Paper other than Boards	144	U.S. Woodpulp Production—1953-54	147	1954 Production in South	150
U.S. Tissue Papers	144	Pacific Coast Pulp Production	147	Pacific Coast and Rocky Mt. Survey	150
U.S. Newsprint	144	U.S. Woodpulp Exports	147	Western Wash. and Ore. Species	150
U.S. Book Paper	144	U.S. Pulp Production by Regions	147	Inland Empire Pulpwood	150

U. S. PULP & PAPER INDUSTRY

Number of Companies and Mills

Year	—Mills—		
	Co's	Paper	Pulp
1946.....	517	735	242
1947.....	560	758	241
1948.....	570	768	245
1949.....	565	764	255
1950.....	572	767	259
1951.....	530	769	278
1952.....	490	768	303
1953.....	483	772	299
1954.....	482	775	319

Wages and Industry Worth

Year	Wage Earners	Wages Paid	Industry Worth
1849	6,785	\$1,497,792	\$7,260,864
1869	18,021	7,208,691	34,556,014
1889	31,050	13,204,828	59,829,548
1899	49,646	20,746,426	167,507,713
1909	75,978	40,804,502	409,348,505
1919	113,759	135,690,642	905,794,583
1929	128,049	173,077,781	1,250,000,000
1939	137,445	175,687,842	1,700,000,000
1943	150,000	299,000,000	1,990,000,000
1946	167,000	366,000,000	2,420,000,000
1949	198,000	614,000,000	3,580,000,000
1950	205,000	694,000,000	4,080,000,000
1951	212,000	780,000,000	4,400,000,000
1952	219,000	839,000,000	4,890,000,000
1953	221,000	919,360,000	5,490,000,000

Source: U. S. Census Bureau, A.P.P.A.

UNITED STATES PULP AND PAPER INDUSTRY STATISTICS

	In Billion of Dollars			In Millions		No. Employees	Tons Per Employee	Wages Per Ton	Unit Production Per Man Hr.
	Assets	Net Worth	Sales	Taxes	Wages	Thousands	Employee	Ton	Per Man Hr.
1939....	\$2.36	\$1.70	\$1.45	\$49	\$176	138	98	\$13.0	100.0
1942....	2.68	1.92	2.46	265	284	164	104	16.6	101.9
1945....	2.97	2.13	2.88	214	352	159	109	20.2	99.1
1948....	4.68	3.34	5.38	346	612	205	107	27.7	111.1
1949....	4.89	3.59	4.79	264	614	198	103	30.2	115.7
1950....	5.59	4.08	5.89	529	694	205	119	28.6	125.0
1951....	6.60	4.40	7.22	982	780	212	123	29.9	128.6
1952....	7.07	4.89	7.00	665	(not available)				
1953....	7.65	5.49	7.60	646					

Last year for which data is available.

Source: American Paper and Pulp Assn.

U. S. INDUSTRY GROWTH (in Millions of Units)

Year	Pulpwood Consumption	Woodpulp Production	Woodpulp Consumption	Waste paper Consumption
	10.8 cords	7.0 tons	8.7 tons	4.4 tons
1939	10.8	7.0	8.7	4.4
1950	23.7	14.8	16.5	7.9
1951	26.5	16.5	17.7	9.1
1952	26.4	16.5	17.3	7.9
1953	28.1	17.5	18.7	8.8
1954	29.2	18.3	19.0	8.1

Year	Paper & board Production	Woodpulp Imports	Newsprint Imports
	13.5 tons	2.0 tons	2.6 tons
1939	13.5	2.0	2.6
1950	24.3	2.4	4.9
1951	26.0	2.4	5.0
1952	24.4	1.9	4.0
1953	26.5	2.2	5.0
1954	26.7	2.1	5.0

UNITED STATES—WEEKLY EARNINGS PULP, PAPER, PAPERBOARD AND CONVERTED PRODUCTS

Year	No. of Production Workers (In Thousands)	(For Production Workers Only) Ave. Weekly Earnings	Ave. Weekly Hours	Ave. Hourly Earnings
1947	406	\$50.21	43.1	\$1.16
1948	407	\$55.25	42.8	\$1.29
1949	389	\$55.96	41.0	\$1.34
1950	415	\$61.14	43.3	\$1.41
1951	434	\$65.51	43.1	\$1.52
1952	422	\$68.91	42.8	\$1.61
1953	444	\$72.90	43.0	\$1.69
1954	437	\$74.01	42.3	\$1.75

Source: U.S. Bureau of Labor Statistics

TOTAL PAPER PRODUCTION IN UNITED STATES BY GRADES (Tons of 2,000 lbs.)

Year	Newsprint	Book	Groundwood	Fine	Wrapping (Coarse)	Tissue	Sanitary	Absorbent	Building Paper	Other Paper	Total Paper	Total All and Board
1899	569,121	304,459	.....	131,456	535,252	28,406	.....	.....	.....	*204,697	1,773,482	2,167,593
1924	1,481,425	1,050,000	.....	422,000	1,235,000	242,000	.....	.....	.....	*649,560	5,079,985	7,929,985
1940	1,056,304	1,655,423	550,453	735,753	2,500,818	733,894	.....	129,410	682,460	60,120	8,104,635	14,483,709
1945	725,475	1,501,015	636,026	1,000,794	2,403,182	157,083	823,705	88,643	883,259	238,047	8,457,229	17,370,955
1948	875,760	3,153,999	.....	1,140,859	3,026,699	205,095	982,892	107,305	1,321,431	307,690	11,118,530	21,897,301
1949	917,778	2,978,222	.....	1,014,954	2,757,731	186,667	1,008,162	86,113	1,151,374	247,893	10,348,894	20,315,436
1950	1,013,346	3,302,861	.....	1,198,574	3,285,635	225,199	1,148,351	126,690	1,424,633	340,903	12,066,192	24,377,222
1951	1,106,165	3,514,061	.....	1,366,425	3,627,072	270,138	1,215,258	124,412	1,385,691	419,036	13,010,418	26,048,143
1952	1,108,723	3,385,179	.....	1,295,179	3,237,885	209,000	1,148,000	118,000	1,298,799	396,698	12,197,165	24,422,785
1953	1,068,061	3,576,338	.....	1,289,569	3,397,782	231,166	1,277,494	127,644	1,317,253	538,249	12,703,754	26,458,781
1954	1,191,760	3,582,800	.....	1,323,944	3,428,608	.....	1,561,334	1	1,355,941	526,209	12,970,596	26,656,631

* In 1899 and 1924 groundwood, absorbent, sanitary and building papers are included in "Other Paper." Beginning in 1948, groundwood included with book.

1 Absorbent included in "Other Paper."

Source: U. S. Census Bureau.

U. S. PAPER PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION

(All Grades—in tons of 2,000 lbs.)

Year	Production	Imports**	Exports**	Consumption	
				Tons	Lbs./Capita
1899.....	2,167,593	.....	.....	2,167,593	57.9
1909.....	4,121,495	55,962	74,764	4,102,693	90.5
1919.....	5,966,076	707,548	420,540	6,253,084	119.1
1929.....	11,140,235	2,533,603	262,383	13,411,455	220.3
1939.....	13,509,642	2,687,484	248,569	15,948,557	243.7
1942.....	17,083,862	3,038,499	341,920	19,780,441	293.8
1945.....	17,370,965	2,753,211	458,689	19,665,487	281.7
1948.....	21,897,301	4,581,811	397,019	26,082,093	355.9
1949.....	20,315,436	4,751,323	372,277	24,694,482	331.0
1950.....	24,377,222	5,007,384	371,546	29,013,060	382.5
1951.....	26,086,115	5,158,010	634,303	30,609,822	396.6
1952.....	24,422,785	5,191,051	592,231	29,013,000	372.5
1953.....	26,458,781	5,231,326	474,730	31,322,952	392.4
1954.....	26,656,631	5,189,500	699,918	31,146,213	383.6

** Quantities estimated, wholly or in part, from values given. Imports and exports for various grades include 'Paper Products.'
Source—U. S. Census Bureau; A.P.P.A.

BASIC U. S. PRODUCTION AND CONSUMPTION DATA

WOODPULP					
PAPER			Consumption		
Production (tons)	Consumption (tons)	Production (tons)	Consumption For Paper Only (tons)	All Purposes (paper, rayon, cellophane, film, plastics, etc.,—tons)	PULPWOOD Consumption (cords)
1899.....	2,167,593	2,158,000	1,179,525	1,216,254	1,986,310
1909.....	4,216,708	4,224,000	2,495,523	2,856,593	4,001,607
1919.....	6,190,361	6,479,490	3,517,952	4,113,911	5,477,832
1929.....	11,140,235	13,347,925	4,862,885	6,704,341	7,645,011
1934.....	9,186,266	11,185,682	4,436,128	5,969,633	6,796,659
1938.....	11,327,000	13,488,300	5,933,560	7,975,000	9,193,991
1942.....	17,083,862	19,608,862	10,783,430	11,038,020	17,204,000
1946.....	19,277,667	22,509,788	10,605,225	12,092,093	17,817,560
1948.....	21,897,301	26,082,093	12,872,292	14,374,586	21,189,458
1949.....	20,315,436	24,694,482	12,171,786	13,606,387	19,949,440
1950.....	24,377,222	29,013,060	14,810,860	16,483,201	23,627,000
1951.....	26,086,115	30,609,822	16,494,000	17,704,000	26,576,000
1952.....	24,422,785	29,013,000	16,472,979	17,274,000	26,476,110
1953.....	26,458,781	31,322,952	17,537,295	18,681,713	28,150,003
1954.....	26,656,631	31,159,209	18,341,175	19,033,994	29,201,000

Source: American Paper and Pulp Assn.; U. S. Census Bureau.

AVERAGE HOURLY EARNINGS U. S. PULP AND PAPER INDUSTRY VS. U. S. FACTORY AVERAGE

	Pulp and paper Hourly earnings	U. S. Factory Hourly earnings
June 1939....	\$.818	\$.631
June 1941....	.716	.732
June 1943....	.851	.959
June 1945....	.906	1.038
June 1947....	1.232	1.244
Dec. 1947....	1.289	1.245
June 1948....	1.368	1.340
June 1949....	1.410	1.405
June 1950....	1.466	1.453
Dec. 1950....	1.573	1.543
June 1951....	1.599	1.599
Dec. 1951....	1.634	1.636
June 1952....	1.680	1.650
Dec. 1952....	1.740	1.730
June 1953....	1.78	1.76
Dec. 1953....	1.83	1.79
June 1954....	1.83	1.81
Dec. 1954....	1.88	1.83

Source: U. S. Bureau of Labor Statistics

VALUE OF SALES IN U. S. INDUSTRY AND BY WHOLESALE

Year	By Pulp, Paper, Board and Products Industries Millions of dollars	By Wholesale Distributors of Paper and Its Products Millions of dollars
1939.....	\$1,785	\$575
1941.....	\$2,836	\$739
1943.....	\$3,389	\$833
1945.....	\$3,725	\$909
1947.....	\$5,764	\$1,828
1948.....	\$6,066	\$1,902
1949.....	\$5,448	\$1,723
1950.....	\$6,671	\$2,013
1951.....	\$8,432	\$2,400
1952.....	\$8,023	\$2,195
1953.....	\$8,701	\$2,587
1954.....	\$8,738	\$2,681

Source: U. S. Dept. of Commerce.

PRODUCTION WORKERS AND WAGES IN U. S. PULP, PAPER AND ALLIED PRODUCTS INDUSTRIES

Year	Average number of wage earners (Thousands)	Total dollar wages (Millions)
1899.....	94	36
1909.....	145	68
1919.....	203	208
1929.....	229	281
1939.....	265	310
1949.....	389	1,112
1951.....	420	1,436
1952.....	422	1,514
1953.....	444	1,683
1954.....	437	1,681

Source: U. S. Bureau of Labor Statistics. Source of data prior to 1939: Bureau of Census.

CONSUMPTION OF WASTE FIBROUS MATERIALS BY U. S. MILLS

(In Thousands of Tons)

	Waste Paper	Rags	Straw, Flax and Other	Total
1939....	4,366	468	692	5,526
1944....	6,859	428	957	8,245
1945....	6,800	414	929	8,143
1946....	7,278	403	980	8,660
1947....	8,009	462	1,064	9,535
1948....	7,649	425	1,075	9,149
1949....	6,600	382	833	7,815
1950....	7,956	442	998	9,395
1951....	9,070	389	1,055	10,523
1952....	7,881	325	871	9,007
1953....	8,530	325	930	9,785
1954....	8,064	317	895	9,276

Source: Pulp and Paper Sec., Forest Products Div., Office of Domestic Commerce and NPA, Pulp, Paper, and Paperboard Div.

U. S. NEWSPRINT SUPPLY AND SOURCES

	In thousands of short tons			Percentages			
	from Canada	from U.S.A.	from Europe	TOTAL	from Canada	from U.S.A.	from Europe
1915.....	367	1,184	1	1,552	24%	76	0
1925.....	1,315	1,507	133	2,955	45%	51	4
1930.....	2,145	1,272	134	3,551	60%	36	4
1935.....	2,122	911	197	3,230	66%	28	6
1940.....	2,741	998	34	3,773	73%	26	1
1945.....	2,666	707	nil	3,373	79%	21	0
1946.....	3,563	754	13	4,330	82%	18	0
1949.....	4,380	884	255	5,519	79%	16	5
1950.....	4,748	1,002	170	5,920	80%	17	3
1951.....	4,784	1,108	206	6,098	79%	18	3
1952.....	4,855	1,065	190	6,110	79%	18	3
1953.....	4,861	1,037	164	6,062	80%	17	3
1954.....	4,875	1,085	140	6,100	80%	18	2

Sources: Supply from Canada is the amount of shipments reported by Canadian mills to NAC, from U.S. is the amount of shipments from U.S. mills reported to NSB less exports and from Europe is taken from reports of the U.S. Department of Commerce.

Fewer is the average of the five years 1935-39.

NEWSPRINT PAPER CONSUMPTION —U. S.

	Population	Newsprint Tons	Paper Used Per Capita Lbs.
1924..	113,090,000	2,737,000	48.4
1930..	123,091,000	3,563,000	57.9
1935..	127,521,000	3,300,000	51.7
1940..	132,817,000	3,730,000	56.2
1944..	138,101,000	3,250,000	47.1
1945..	139,621,000	3,480,000	49.8
1946..	141,229,000	4,296,000	60.8
1947..	143,382,000	4,753,000	66.3
1948..	146,116,000	5,141,000	70.4
1949..	149,215,000	5,529,000	74.1
1950..	151,376,000	5,937,000	78.4
1951..	153,396,000	5,975,000	77.9
1952..	155,300,000	5,988,000	77.2
1953..	160,873,000	6,143,000	76.9
1954..	162,400,000	6,150,000	75.8

U. S.—ALL PAPER OTHER THAN PAPERBOARDS

	Consumption Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumption Lbs. per Capita
1899..	1,773	1,773	....	....	1,773	47
1914..	3,860	3,860	349	108	4,103	84
1924..	5,079	1,445	100	6,424	113	113
1934..	5,173	2,252	114	7,311	116	116
1941..	9,362	3,086	317	12,131	182	182
1947..	10,705	4,060	297	14,468	201	201
1949..	10,349	4,681	226	14,804	198	198
1950..	12,066	4,922	225	16,763	221	221
1951..	13,022	5,043	358	17,707	229	229
1952..	12,194	5,106	388	16,911	217.1	217.1
1953..	12,703	5,106	257	17,552	219.9	219.9
1954..	12,970	5,091	389	17,673	217.6	217.6

Source: A.P.P.A., Census Bureau

U. S.—TISSUE PAPERS (In Thousands of Tons)

	Consumed Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumed Lbs. per Capita
1899..	28	28	....	....	28	1
1914..	115	115	....	....	115	2
1924..	242	6	4	244	4	4
1934..	397	8	7	398	6	6
1941..	912	.07	25	889	13	13
1947..	1,088	1	18	1,071	15	15
1949..	1,195	1.4	21	1,175	16	16
1950..	1,374	.5	18	1,356	18	18
1951..	1,485	.2	21	1,465	19	19
1952..	1,357	.2	17	1,340	17	17
1953..	1,488	1.9	22	1,467	18.4	18.4
1954..	1,561	1.8	22	1,540	19	19

Source: A.P.P.A., Census Bureau

U. S. PAPERBOARD STATISTICS (In Tons of 2,000 lbs.)

Year—	Production	Imports	Exports	Consumption	Per Capita Consumption Lbs.
1899.....	394,111	....	....	394,111	10.5
1909.....	883,088	....	....	883,088	19.5
1919.....	1,867,064	44,461	61,890	1,849,635	35.2
1929.....	4,451,187	42,351	94,374	4,399,164	72.4
1939.....	6,025,494	28,728	113,571	5,940,651	90.8
1945.....	8,913,736	51,189	155,020	8,809,905	126.2
1948.....	10,775,454	75,072	170,837	10,679,689	145.7
1949.....	9,966,542	70,309	146,026	9,890,825	132.6
1950.....	12,311,030	85,850	146,168	12,250,712	161.5
1951.....	13,063,817	114,384	276,117	12,902,292	167.2
1952.....	12,219,112	83,759	172,535	12,101,532	155.4
1953.....	13,862,602	124,947	217,359	13,770,190	172.5
1954.....	13,686,035	98,317	297,717	12,486,635	166.1

Source: American Paper and Pulp Assn., Census Bureau.

UNITED STATES PAPERBOARD PRODUCTION (In Tons of 2,000 lbs.)

	Container Board	Folding Boxboard	Setup Boxboard	Building Boards	Other Boards	Total Paperboard
1940.....	3,434,834	1,416,452	898,549	179,443	449,796	6,379,074
1945.....	4,131,107	2,092,344	721,087	894,830	1,074,368	8,913,736
1948.....	5,078,929	2,199,608	596,190	1,270,348	1,629,605	10,775,454
1949.....	4,681,054	2,084,415	617,249	838,729	1,734,757	9,966,542
1950.....	5,646,433	2,368,010	641,345	1,258,620	2,292,071	12,311,030
1951.....	6,346,966	2,428,794	700,762	1,314,850	2,272,445	13,063,817
1952.....	5,766,462	2,192,903	687,599	1,314,809	2,263,847	12,225,620
1953.....	6,613,206	2,428,988	763,166	1,379,290	2,621,053	13,805,703
1954.....	6,432,250	2,484,725	710,302	1,506,998	2,551,760	13,686,035

Source: American Paper and Pulp Assn.

U. S.—NEWSPRINT

(In Thousands of Tons)

	Consumption Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumption Lbs. per Capita
1899..	569	569	....	....	569	15
1914..	1,313	273	44	1,547	32	32
1924..	1,481	1,357	17	2,821	50	50
1934..	989	2,209	23	3,175	50	50
1941..	1,043	2,982	70	3,956	60	60
1947..	833	3,957	28	4,762	66	66
1949..	918	4,640	39	5,519	74	74
1950..	1,013	4,863	44	5,832	77	77
1951..	1,106	4,968	71	6,004	78	78
1952..	1,106	5,033	105	6,034	78	78
1953..	1,068	5,004	47	6,086	76	76
1954..	1,191	4,992	140	6,043	74	74

Source: Census Bureau, A.P.P.A.

U. S. BOOK PAPER

(In Thousands of Tons)

	Consumption Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumption Lbs. per Capita
1899..	304	304	....	....	304	8
1914..	795	6	14	788	16	16
1924..	1,050	14	10	1,053	18	18
1934..	1,055	4	12	1,047	16	16
1941..	2,025	28	51	2,002	30	30
Beginning 1941, text papers allocated to fine papers						
1947..	2,207	74	76	2,206	31	31
Beginning 1948 Groundwood Papers included with Book Paper. Groundwood was in All Other Paper.						
1949..	2,972	28	41	2,965	40	40
1950..	3,303	38	27	3,314	44	44
1951..	3,526	51	52	3,524	46	46
1952..	3,387	48	66	3,369	43	43
1953..	3,593	45	26	3,612	45	45
1954..	3,583	44	41	3,586	44	44

Source: A.P.P.A., Census Bureau

U. S. FINE PAPERS

(In Thousands of Tons)

	Consumed Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumed Lbs. per Capita
1899..	131	131	....	....	131	3
1914..	269	3	3	266	5	5
1924..	422	1.3	4	419	7	7
1934..	434	.8	10	425	7	7
1941..	950	2	46	903	14	14
1947..	1,171	.6	68	1,103	15	15
1949..	1,015	.6	48	967	13	13
1950..	1,199	1.4	41	1,159	15	15
1951..	1,364	1.6	54	1,311	17	17
1952..	1,295	1.7	47	1,249	16	16
1953..	1,289	2.4	40	1,242	15	15
1954..	1,324	2.3	47	1,279	16	16

From 1899 to 1940 inclusive, only writing and cover were in fine papers. Beginning 1941, text papers (from book), bristol (from paperboard), and "thin papers" (from tissue) have been added.

Source: American P. & P. Assn., Census Bureau.

U. S. COARSE PAPERS

(In Thousands of Tons)

	Consumed Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumed Lbs. per Capita
1899..	535	535	....	....	535	14
1914..	911	18	7	922	18.8	18.8
1924..	1,235	25	18	1,242	22	22
1934..	1,356	5	32	1,329	21	21
1943..	2,262	1	49	2,213	32	32
1947..	2,903	22	51	2,874	40	40
1949..	2,758	6	56	2,708	36	36
1950..	3,286	11	73	3,243	43	43
1951..	3,597	11	130	3,478	45	45
1952..	3,235	10	121	3,124	40	40
1953..	3,397	35	86	3,371	42	42
1954..	3,429	36	95	3,369	42	42

Source: A.P.P.A., Census Bureau

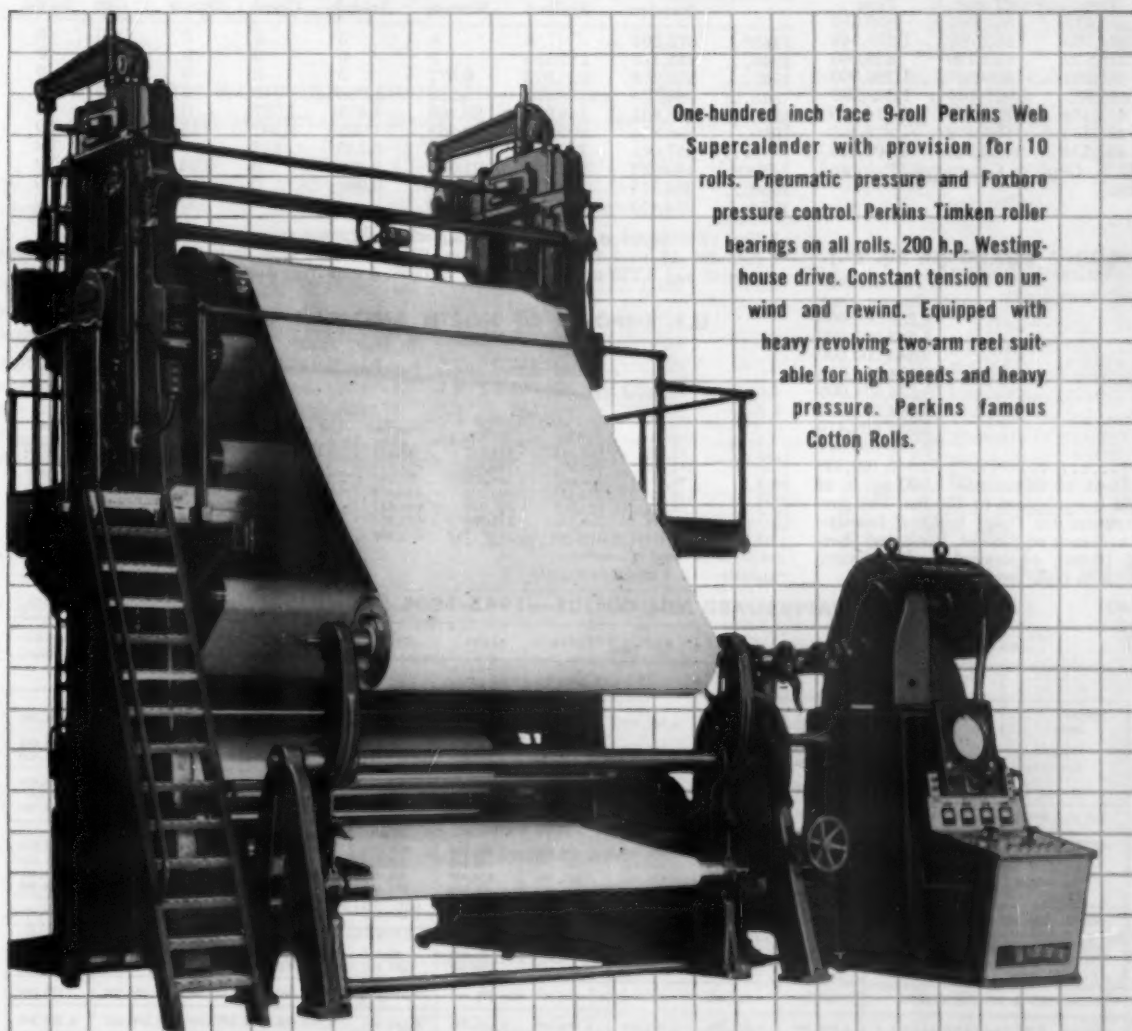
U. S.—ALL OTHER PAPER

(In Thousands of Tons)

	Consumed Lbs. per Capita	Produced	Imp'ts	Exp'ts	Tons	Consumed Lbs. per Capita
1899	53	53	....	....	53	1.4
1914	107	46	37	116	2.3	2.3
1924	129	31	40	120	2.1	2.1
1934	298	14	22	290	4.6	4.6
1943	296	3	15	283	4.2	4.2
1947	389	3	38	354	4.9	4.9
1949	338	3	35	306	4.1	4.1
1950	460	5	14	450	5.9	5.9
1951	535	8	19	524	6.8	6.8
1952	513	10	24	499	6.4	6.4
1953	538	12	27	523	6.6	6.6
1954	526	13	33	505	6.2	6.2

Source: American P. & P. Assn.—Up to 1948, included groundwood. Since then, groundwood included in book.

ENGINEERED AND BUILT BY
PERKINS



One-hundred inch face 9-roll Perkins Web Supercalender with provision for 10 rolls. Pneumatic pressure and Foxboro pressure control. Perkins Timken roller bearings on all rolls. 200 h.p. Westinghouse drive. Constant tension on unwind and rewind. Equipped with heavy revolving two-arm reel suitable for high speeds and heavy pressure. Perkins famous Cotton Rolls.

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SOUTHERN SALES OFFICE • 1000 LIBERTY LIFE BLDG • CHARLOTTE • NORTH CAROLINA

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

U. S. BOARD PRODUCTION

(U. S. Department of Commerce—
in Thousands of Tons)

	Paper-board*	Wet Machine Board**	Building Board
1946	8,396	138	956
1949	8,992	125	839
1950	10,803	144	1,250
1951	11,605	144	1,315
1952	10,772	139	1,314
1953	12,275	152	1,379
1954	12,047	132	1,507

*Container boards, box boards, cardboard and other.

**Shoe board, binder board and other.

U. S. IMPORTS OF EUROPEAN WOODPULP BY GRADES

(Short Tons)

	Bleached Sulfite Paper Grades	Non-Paper Grades	Unbleached Sulfite	Bleached Sulfate	Unbleached Sulfate	Groundwood	Total*
1946	27,541	12,417	207,059	23,484	260,434	29,399	560,334
1949	90,008	4,145	135,229	68,397	130,897	19,065	449,218
1950	115,020	8,262	163,975	86,548	257,160	34,618	668,146
1951	90,991	3,923	122,639	71,484	158,736	34,746	484,201
1952	59,774	3,317	125,623	70,568	72,103	27,529	359,138
1953	99,459	1,291	126,075	119,722	138,013	56,669	543,903
1954	41,955	2,230	73,451	95,681	117,470**	37,328	372,310

Source: Department of Commerce

* Includes screenings and soda.

** Includes 13,260 tons semi-bleached.

U. S. BUILDING BOARDS PRODUCTION

Year	Wall-board (Tons)	Insulating board (Tons)	Total Tons
1941	254,477	362,033	616,510
1948	364,562	905,786	1,270,348
1949	216,530	622,199	839,000
1950	381,201	838,367	1,220,000
1951	343,552	925,744	1,269,296
1952	435,154	879,655	1,314,809
1953	423,418	955,872	1,379,290
1954	493,258	1,013,740	1,506,998

Source: U. S. Dept. of Commerce (Pulp and Paper Section).

U. S. WOODPULP IMPORTS FROM EUROPE

(In Short Tons)

	Sweden	Finland	Norway	Austria	Czech.	France	Ger.	Switz.	Total**
1945* ..	672,261	0	0	0	0	0	0	0	672,261
1946 ...	445,114	115,220	0	0	0	0	0	0	560,334
1947 ...	555,215	223,973	9,577	0	0	0	0	0	789,693
1948 ...	384,576	175,900	13,218	1,696	0	0	0	0	575,390
1949 ...	265,621	148,903	29,208	4,459	1,027	0	0	0	449,218
1950 ...	368,814	205,651	28,958	21,005	2,597	115	977	89	668,146
1951 ...	257,061	182,616	36,365	3,225	512	106	2,812	89	482,801
1952 ...	189,613	145,630	21,168	2,430	0	124	169	0	359,138
1953 ...	334,813	160,216	36,777	9,996	0	211	588	0	542,601
1954 ...	224,471	132,792	14,997	0	0	50	0	0	372,310

* The 1945 figure is for only 6 mos., when shipping reopened after the war.

** Includes 15 tons from Denmark in 1951; 167 tons from Italy in 1950; 4,928 tons from Russia in 1947 and 9,773 tons from Russia in 1950; 4 tons from Australia in 1952.

U. S. BUILDING BOARD (In Sq. Ft.)

Year	Production—Square Feet
1939	1,258,000,000
1943	2,645,000,000
1948	3,344,000,000
1949	2,184,225,000
1950	3,324,578,000
1951	3,184,302,000
1952	3,355,663,419
1953	3,676,640,941
1954	3,846,169,338

Source: Dept. of Commerce. 1,000 sq. ft. of ½-inch board is equivalent to 750 lbs. The government statistics for "total building boards—hardboard in ½-inch equivalent, laminated fiberboard in 3/16-inch equivalent, and structural insulation in ½-inch equivalent."

U. S. IMPORTS OF NORTH AMERICAN WOODPULP BY GRADES

(In Short Tons)

Includes: Canada, Newfoundland, Labrador, Mexico

	Bleached Sulfite			Sulfate		Groundwood		Soda	Total
	Paper Grades	Non-Paper Grades	Unbl'ch'd Sulfite	Bleached	Unbleached	Bleached	Unbleached		
1946	195,112	189,775	411,512	56,213	137,472	220,823	19,740	1,245,131	
1949	241,280	149,801	256,993	323,212	117,917	188,620	27,313	1,313,325	
1950	288,014	229,092	364,531	366,047	183,238	15,548	228,627	1,717,035	
1951	258,571	225,836	441,235	450,076	176,837	17,034	264,996	1,881,119	
1952	215,796	220,010	306,929	448,467	135,768	31,622	183,089	1,581,214	
1953	234,079	234,232	334,364	470,302	154,580	57,298	145,368	1,613,684	
1954	246,441	228,143	265,957	551,484	152,382*	51,253	147,975	1,688,410	

Source: Department of Commerce

* Includes 11,324 tons semi-bleached.

PAPERBOARD MILL CENSUS—1945-1954 (in tons)

GRADES	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
CONTAINERBOARDS										
LINERS										
Jobs	1,140,000	2,219,100	1,300,000	1,132,700	770,700	921,900	1,067,000	772,700	637,300	791,300
Cylinder Kraft	137,000	190,000	232,400	218,700	198,900	309,000	303,000	182,100	190,400	155,000
Fourdrinier Kraft	1,300,000	2,311,000	1,060,400	1,900,300	2,037,600	2,677,000	2,782,000	2,727,000	2,191,300	3,155,000
Total Kraft	1,437,000	2,501,100	1,292,800	2,119,000	2,236,500	3,686,000	3,869,000	2,909,100	2,381,700	3,350,000
TOTAL LINERS	2,500,000	2,721,000	3,137,000	3,251,700	3,004,100	3,709,000	4,043,000	3,682,000	4,308,000	4,111,000
CORRUGATING MATERIALS										
Semichemical *	300,000	305,000	600,000	430,400	535,000	720,000	837,300	844,100	1,030,000	1,102,200
Kraft	154,000	174,000	134,400	134,300	225,000	225,000	199,900	213,100	218,700	175,400
Strawboard *	376,000	385,000	467,000	493,000	515,000	550,000	543,400	575,000	575,700	544,200
Other *	979,000	894,000	380,700	364,900	376,000	373,000	382,000	385,100	385,100	354,900
TOTAL CORRUGATING MATERIALS	1,111,000	1,568,100	1,420,300	1,328,300	1,340,200	1,670,000	1,806,100	1,628,900	1,999,500	1,876,700
CHIP & FILLER BOARDS										
Linear Chip	80,000	114,200	81,000	67,200	70,000	75,000	77,000	75,400	95,000	82,300
Filler Board	514,000	314,000	348,000	334,100	190,200	237,000	280,400	253,000	243,900	194,500
TOTAL CHIP & FILLER BOARDS	597,000	428,200	429,000	401,300	260,200	312,000	357,400	328,400	338,900	276,800
TOTAL CONTAINERBOARDS *	4,000,000	4,212,700	4,986,400	4,960,300	4,623,100	5,692,000	6,208,000	5,637,000	6,646,000	6,288,200
BOXBOARDS										
Folding Boardboard **	1,723,300	2,100,000	2,996,500	2,098,400	2,010,100	2,358,100	2,341,900	2,186,400	2,380,400	2,353,300
Set-up Boardboard	811,000	474,100	691,500	639,500	662,500	729,500	681,000	633,400	676,100	612,500
Special Food Board	400,000	448,000	480,000	442,400	515,000	705,000	810,000	894,000	961,400	1,001,500
All Other Paperboard **	1,304,000	1,100,000	1,313,700	1,479,000	1,230,400	1,064,000	1,049,000	1,700,300	2,061,100	2,026,200
TOTAL BOXBOARDS	3,238,300	4,122,100	5,281,700	4,659,300	4,420,000	5,456,600	5,881,900	5,414,100	6,079,000	5,993,500
SUMMARY										
Kraft Paperboard	1,970,200	2,032,000	2,419,500	2,810,200	3,067,200	3,672,900	4,113,200	4,141,300	4,839,700	4,814,200
Semichemical Paperboard	500,000	590,000	505,000	400,400	535,000	732,000	884,000	867,000	1,066,000	1,119,700
All Other Paperboard	5,061,300	5,061,300	5,435,000	6,230,300	5,490,000	6,543,700	6,923,100	6,063,300	6,629,200	6,354,900
TOTAL PAPERBOARD	7,531,500	7,683,300	8,359,500	9,440,900	9,292,200	11,149,600	11,920,300	11,073,600	12,534,900	12,288,800
* Excludes Estimated Imports	3,300	40,000	10,000	40,000	32,000	30,000	40,000	32,000	56,000	32,000
** Analysis for 1945 Estimated										
** 1945 - 1949 Special Food Board figures obtained from U. S. Department of Commerce. This category formerly included in Folding and All Other Totals.										

Source: NATIONAL PAPERBOARD ASSOCIATION

TOTAL UNITED STATES PRODUCTION OF WOODPULP

(Tons of 2000 pounds)

Year	Total	Unbleached Sulfate	Bleached Sulfate	Total Sulfate	Groundwood	Soda	All Other
1925.	3,962,217	790,510	612,576	409,768	1,612,019	472,647	64,697
1935.	4,925,689	634,947	944,620	1,467,749	1,355,819	417,724	104,810
1940.	8,959,559	995,700	1,612,089	3,747,992	1,632,727	532,387	438,664
1942.	10,783,430	1,213,066	1,717,206	4,738,266	1,869,862	462,065	782,965
1944.	10,108,443	862,928	1,523,221	4,548,810	1,769,287	412,755	991,442
1946.	10,606,527	784,391	1,692,077	4,588,016	1,951,456	476,211	1,114,376
1948.	12,872,292	901,814	1,909,402	6,013,696	2,175,107	509,864	1,362,409
1949.	12,171,786	707,263	1,829,021	5,977,281	1,960,496	492,194	1,205,531
1950.	14,807,575	740,895	2,107,541*	7,501,429	2,215,883	522,221	1,719,606
1951.	16,494,386	754,916	2,378,692*	8,576,298	2,476,635	446,483	1,861,962
1952.	16,472,979	673,453	1,691,523	8,568,704	2,379,740	425,415	2,028,111
1953.	17,537,295	593,958	1,728,648	9,444,816	2,342,929	427,546	2,999,398
1954.	18,341,175	582,156	1,800,734	9,807,982	2,428,550	431,603	3,290,150

Source: U. S. Bureau of the Census revised 1953 figures issued June 1954.

Note: Through 1939, "exploded" wood pulp is included in Groundwood and thereafter in "All Other." 1933 through 1936 data on Soda are estimated from United States Bureau of the Census combined data for Soda and Semichemical pulp. Bleached and Semi-Bleached Sulfate totaled 7,053,609 tons in 1953; 6,485,860 in 1952. Semi-chemical Pulp totaled 1,028,721 tons in 1953; 828,917 in 1952.

* Includes dissolving grades of bleached sulfate.

UNITED STATES WOODPULP PRODUCTION—1953 vs. 1954

	TOTAL WOODPULP, ALL GRADES			MARKET WOODPULP, ALL GRADES		
	1953	1954	% Change	1953	1954	% Change
Capacity	19,497,367	21,038,542	+7.9			
Production	17,537,295	18,341,175	+4.6	1,783,921	2,159,236	+21.0
Imports	2,157,574	2,050,760	-5.0	1,578,444	1,486,150	-5.8
Canada				1,034,535	1,113,800	+7.7
Europe				543,909	372,350	-31.5
Exports	161,687	438,542	+171.2	161,787	438,542	+171.2
New Supply	19,533,182	19,953,393	+2.2	3,200,678	3,206,844	+0.2
Consumption	19,593,907	19,900,794	+1.6	3,282,798	3,159,138	-3.8
in paper & board	18,681,407	19,033,994	+1.9	2,498,498	2,420,438	-3.1
in non-paper	912,500	866,800	-5.0	784,300	738,700	-5.8

Total imports are slightly larger than market pulp imports because they include imports to paper mills from their own mills in Canada and for their own use. (Source: U.S. Pulp Producers)

U. S. PACIFIC COAST STATES PULP PRODUCTION

Tons of 2,000 lbs. (except defibrated, exploded, and similar pulps)			
1923	299,596	1941	1,994,150
1926	378,005	1943	1,521,531
1929	780,494	1945	1,591,789
1931	817,548	1947	2,005,089
1932	607,662	1949	2,078,526
1933	773,102	1950	2,417,998
1935	1,011,421	1951	2,768,848
1937	1,523,191	1952	2,766,277
1939	1,384,147	1953	2,940,147
		1954	3,043,419

Source: U. S. Pulp Producers Assn., Inc.

U. S. WOODPULP EXPORTS

	Tons	Value
1930	48,426	\$ 2,070,553
1935	171,710	\$ 8,632,971
1939	139,504	\$ 6,493,140
1940	480,938	\$29,736,737
1943	300,700	\$20,288,879
1946	39,361	\$ 3,645,963
1949	122,133	\$14,082,575
1950	95,693	\$12,056,311
1951	182,861	\$39,112,079
1952	198,685	\$32,215,417
1953	161,687	\$22,793,371
1954	441,863	\$62,337,237

Source: U. S. Department of Commerce and U. S. Pulp Producers Assn.

PULP PRODUCTION BY REGIONS (with figures as available for certain states)

	1953
Northeast	1,556,167
Maine	1,226,213
Mid-Atlantic	976,742
New York	585,113
New Jersey	81,582
Pennsylvania	380,047
East North Central	1,484,170
Ohio	69,703
Illinois	60,519
Michigan	280,931
Wisconsin	1,073,017
West North Central	502,137
South Atlantic	5,801,546
Virginia	817,330
North Carolina	838,366
Georgia	1,372,386
Florida	1,675,065
East South Central	1,909,879
Mississippi	1,098,434
West South Central	2,182,048
Louisiana	1,480,229
West	3,124,608
Washington	2,158,318
Oregon	650,007

LEADING WOODPULP STATES (in short tons)

State	1953*
1st Washington	2,158,318
2nd Florida	1,675,065
3rd Louisiana	1,480,229
4th Georgia	1,372,386
5th Maine	1,226,213
6th Mississippi	1,098,434
7th Wisconsin	1,073,017

* Latest available by U.S. Pulp Producers Assn.

U. S. PULP IMPORTS

Year	Chemical Tons	Value	Groundwood Tons	Value
1925	1,332,522	\$ 73,317,337	331,092	\$ 8,317,116
1930	1,530,985	\$ 73,962,977	299,256	\$ 7,146,290
1936	2,049,722	\$ 78,785,004	227,778	\$ 4,051,224
1940	1,053,057	\$ 55,474,094	170,909	\$ 4,712,649
1945	1,326,647	\$106,858,690	227,418	\$ 8,936,177
1947	2,016,152	\$238,126,318	290,516	\$18,032,472
1949	1,534,320	\$146,910,921	208,782	\$12,099,373
1950	2,098,667	\$224,358,925	286,308	\$15,802,852
1951	2,046,311	\$324,280,192	321,178	\$26,414,059
1952	1,693,726	\$252,803,232	242,006	\$18,242,371
1953	1,894,216	\$244,670,888	263,630	\$18,445,508
1954	1,807,897	N.A.	242,865	N.A.

Source: U. S. Pulp Producers Assn. and U. S. Dept. of Commerce.

REGIONAL ORIGIN OF SALES OF DOMESTIC MARKET PULP IN U. S.

All Grades Except Defibrated—Tons of 2,000 lbs.—Showing imported and domestic supply for consumers

Year	Pacific	South	New England	Lake	Mid-Atlantic	Total U.S.	Mkt. Pulp Imports	Total Supply
1947 (Tons)	727,135	227,770	218,451	96,705	69,732	1,339,793	1,883,157	5,222,950
1947 (Percent)	22.6%	7.0%	6.7%	3.0%	2.1%	41.57%	58.43%	100%
1948 (Tons)	801,842	230,744	188,527	95,559	60,920	1,377,592	1,739,120	5,116,712
1948 (Percent)	25.2%	7.3%	5.8%	2.9%	1.8%	42.28%	57.72%	100%
1949 (Tons)	751,267	184,482	165,815	59,801	45,526	1,206,891	1,304,326	2,511,217
1949 (Percent)	29.9%	7.4%	6.8%	2.4%	1.8%	48.1%	51.9%	100%
1950 (Tons)	888,957	312,490	217,496	79,885	60,201	1,558,809	1,910,917	3,469,726
1950 (Percent)	25.6%	9.0%	6.3%	2.3%	1.7%	44.9%	55.1%	100%
1951 (Tons)	922,006	408,417	212,446	84,547	72,912	1,700,328	1,831,718	5,532,046
1951 (Percent)	26.1%	11.5%	6%	2.4%	2.1%	48.1%	51.9%	100%
1952 (Tons)	856,855	434,772	203,910	69,588	43,412	1,608,537	1,400,534	3,009,071
1952 (Percent)	28.5%	14.5%	6.8%	2.3%	1.4%	53.5%	46.5%	100%
1953 (Tons)	859,425	517,747	192,855	51,243	20,217	1,641,487	1,578,444	3,219,931
1953 (Percent)	26.7%	15.1%	6.0%	1.6%	0.6%	51.0%	49.0%	100%
1954 (Tons)	923,395	546,439	189,348	45,335	22,850	1,727,367	1,486,150	3,213,517
1954 (Percent)	28.8%	17.0%	5.9%	1.4%	0.7%	53.8%	46.2%	100%

Source: U. S. Pulp Producers Assn., Inc.

U. S. PRICES OF DISSOLVING WOODPULP Dollars Per Short Ton

	Regular Tenacity Viscose	High Tenacity Viscose	Acetate & Cupres
1929	\$ 97.00		
1933	70.00		
JAN. 1938	97.50		100.00
JAN. 1946	107.50	112.50	117.50
JAN. 1947	132.00	138.50	148.00
MAR. 1948	157.00	167.00	182.00
JUN. 1949	159.00	168.00	178.00
OCT. 1949	150.00	161.00	171.00
AUG. 1950	159.00	170.00	185.00
JAN. 1951	185.00	195.00	225.00
MAY 1952	185.00	195.00	225.00
MAY 1953	185.00	195.00	225.00
MAY 1954	185.00	195.00	225.00
JULY 1955	185.00	195.00	225.00

U. S. PRICES OF COTTON LINTERS PULP Dollars Per Short Ton

	Annual Average	Low	High
1948	225.00	187.00	260.00
1949	172.00	160.00	187.00
1950	337.00	187.00	546.00
1951	459.00	316.00	554.00
1952	288.00	223.00	316.00
1953	235.60	223.00	250.00
1954	210.00	210.00	210.00
1955	210.00	210.00	210.00

U. S. Dept. Agric.—Regional Research Lab., New Orleans, La.

PULPWOOD STATISTICS

TOTAL FOR U. S.

Receipts—Consumption—Inventories

(In Thousands of Cords)					
Yr.	Domestic Receipts	Imports	Total	Consum.	Yr. End Invent.
1941	14,177	2,281	16,458	16,580	3,729
1943	13,581	1,712	15,293	15,645	2,846
1945	15,254	1,729	16,983	16,912	2,627
1947	18,529	2,084	20,613	19,714	4,563
1949	17,547	1,706	19,252	19,916	4,877
1950	20,712	1,834	22,546	23,627	3,615
1951	25,128	2,650	27,778	26,522	5,072
1952	25,045	2,315	27,358	26,462	5,949
1953	26,339	1,548	27,887	28,150	5,650
1954	26,973	1,624	28,597	29,201	5,058

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

APPALACHIAN AREA—PULPWOOD Receipts—Consumption—Inventories

(In Thousands of Cords)					
Yr.	Domestic Receipts	Imports	Total	Consum.	Yr. End Invent.
1941	1,378	34	1,412	1,420	439
1943	1,302	2	1,304	1,442	280
1945	1,365	23	1,388	1,444	206
1947	1,610	23	1,633	1,685	372
1949	1,548	—	1,548	1,614	335
1950	1,705	—	1,705	1,796	249
1951	1,960	—	1,960	1,859	367
1952	1,562	—	1,562	1,673	323
1953	1,870	—	1,870	1,822	370
1954	1,904	—	1,904	1,976	305

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

LAKE STATES—PULPWOOD Receipts—Consumption—Inventories

(In Thousands of Cords)					
Yr.	Domestic Receipts	Imports	Total	Consum.	Yr. End Invent.
1941	1,561	680	2,241	2,398	995
1943	1,409	560	1,969	2,325	962
1945	1,954	502	2,456	2,544	986
1947	2,154	746	2,900	2,725	1,486
1949	1,609	552	2,160	2,351	670
1950	1,985	487	2,472	2,325	986
1951	2,622	803	3,425	3,039	1,380
1952	2,445	739	3,182	2,909	1,701
1953	2,239	523	2,762	3,036	1,418
1954	2,444	529	2,973	2,957	1,411

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

TYPICAL PULP PRICES IN THE UNITED STATES (Prepared especially by PULP & PAPER)

Before World War II—Under OPA Regulation (1944 and 1946 allowed increases are shown)—and in recent years. Specially prepared authentic table for this WORLD REVIEW. Swedish and Norwegian prices are N. Y. Dock prices; U. S. and Canadian are "Delivered" and Maximum Freight Allowances are noted.

	Domestic Bleached Kraft	Canadian Bleached Kraft	Swedish Unbleached Kraft	Swedish Bleached Sulfite	Domestic Bleached Sulfite	Canadian Bleached Sulfite	Norway Bleached Sulfite	Canada Unbleached Sulfite	Swedish Unbleached Sulfite
1939	—	—	\$28	\$43	\$50	—	—	—	\$36
1944	—	—	\$69	\$82	\$86	\$86	—	\$75	\$70
1946	—	—	\$79	\$91	\$94	\$94	—	\$82	\$79
Apr. 1949	\$136	\$136	\$112	\$132	\$126	\$130	\$125	\$118	\$122
June 1951	\$135 to \$200 (1)	\$195 (2)	\$225	\$250 to \$290	\$135 to \$165	\$160 (2) to \$175 (2)	\$250	—	\$225 to \$265
June 1952	\$142 (3) to \$167 (4)	\$190 (1)	\$150	\$175 to \$182.50	\$140 (3)	\$160 to \$165	\$175 to \$180	\$150	\$155 to \$160
May 1953	\$140 to \$147.50	\$145 to \$155	\$100 to \$125	\$130 to \$135	\$140	\$140 to \$145	\$140 to \$145	\$130 to \$135	\$110 to \$125
May 1954	\$140 to \$147.50	\$145 to \$150	\$105 to \$110	\$135 to \$140	\$140	\$140	\$135 to \$142.50	\$120	\$115 to \$122
July 1955	\$150	\$150	\$110 to \$115	\$142.50 to \$145	\$145	\$145	\$140 to \$142.50	\$125	\$125 to \$128

Maximum Freight Allowances:
(1) \$12.50 (2) \$7.50 (3) \$18.50 (4) \$15.00.

NORTHEAST STATES—PULPWOOD

Receipts—Consumption—Inventories

(In Thousands of Cords)					
Yr.	Domestic Receipts	Imports	Total	Consum.	Yr. End Invent.
1941	2,252	1,235	3,486	3,515	1,218
1943	1,906	1,047	2,954	3,245	810
1945	2,311	1,078	3,389	3,245	869
1947	2,970	1,140	4,110	3,740	1,440
1949	2,321	1,004	3,325	3,395	1,526
1950	2,235	1,060	3,295	3,701	1,051
1951	3,137	1,586	4,723	4,280	1,483
1952	3,319	1,422	4,740	4,051	1,937
1953	2,807	1,025	3,832	3,848	1,665
1954	2,739	1,095	3,834	3,829	1,335

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

U.S. PACIFIC COAST—PULPWOOD

Receipts—Consumption—Inventories

(In Thousands of Cords)					
Yr.	Domestic Receipts	Imports	Total	Consum.	Yr. End Invent.
1941	2,585	332	2,918	3,019	782
1943	2,458	103	2,561	2,561	491
1945	2,470	126	2,596	2,472	420
1947	3,581	156	3,734	3,171	974
1949	3,015	148	3,162	3,199	1,031
1950	3,244	287	3,531	3,822	772
1951	4,565	261	4,826	4,490	1,070
1952	4,339	155	4,494	4,499	1,133
1953	4,465	—	4,465	4,692	1,108
1954	4,924	—	4,924	5,425	959

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

PULPWOOD PRODUCTION STATISTICS FOR SOUTHERN STATES (In Cords)

Especially gathered and prepared by PULP & PAPER

	Virginia	North Carolina	South Carolina	Georgia	Florida	Southeast Total
1946	971,000	709,000	1,002,000	1,143,000	865,000	4,711,000
1947	1,025,400	765,200	948,400	1,215,200	881,700	4,835,900
1948	1,306,500	926,200	1,108,500	1,770,600	1,221,200	6,330,000
1949	895,200	802,100	1,012,200	1,790,500	1,036,100	5,536,100
1950	1,044,147	1,024,005	1,182,413	2,221,279	1,384,694	6,856,538
1951	1,326,333	1,304,540	1,251,045	2,370,143	1,490,325	7,742,386
1952	1,069,129	1,332,303	1,275,698	2,513,272	1,583,341	7,773,743
1953	1,267,347	1,528,929	1,446,157	2,879,168	1,674,864	8,796,465
1954	1,258,400	1,507,400	1,330,900	3,057,500	1,661,600	8,815,800
		Oklahoma	Texas	Arkansas	Louisiana	Southwest Total
1946		13,300	616,000	577,000	787,000	1,993,000
1947		29,900	711,100	596,600	870,300	2,207,900
1948		34,300	823,600	616,700	953,800	2,428,400
1949		37,900	790,900	561,300	759,800	2,149,900
1950		38,831	922,304	603,682	883,306	2,448,123
1951		44,618	1,158,371	613,792	1,110,961	2,927,742
1952		34,870	1,159,918	619,664	1,234,745	3,049,197
1953		41,028	1,210,704	780,982	1,375,500	3,408,214
1954		33,000	1,054,300	826,300	1,504,200	3,417,800
		Tennessee	Mississippi	Alabama	Mid-South Total	All-South Total
1946		135,000	1,238,000	756,000	2,130,000	8,844,000
1947		141,300	1,279,100	777,700	2,198,100	9,241,900
1948		181,700	1,433,900	981,900	2,597,500	11,358,900
1949		158,100	1,167,700	911,300	2,237,100	9,923,100
1950		143,958	1,665,863	1,321,204	3,131,025	12,435,686
1951		191,415	1,793,376	1,406,207	3,390,998	14,061,126
1952		268,438	1,861,388	1,608,609	3,738,435	14,561,375
1953		234,162	1,922,975	1,765,140	3,922,277	16,126,956
1954		240,300	1,963,800	1,831,900	4,036,000	16,269,600

Note—Because of rounding, state figures may not add up to totals.

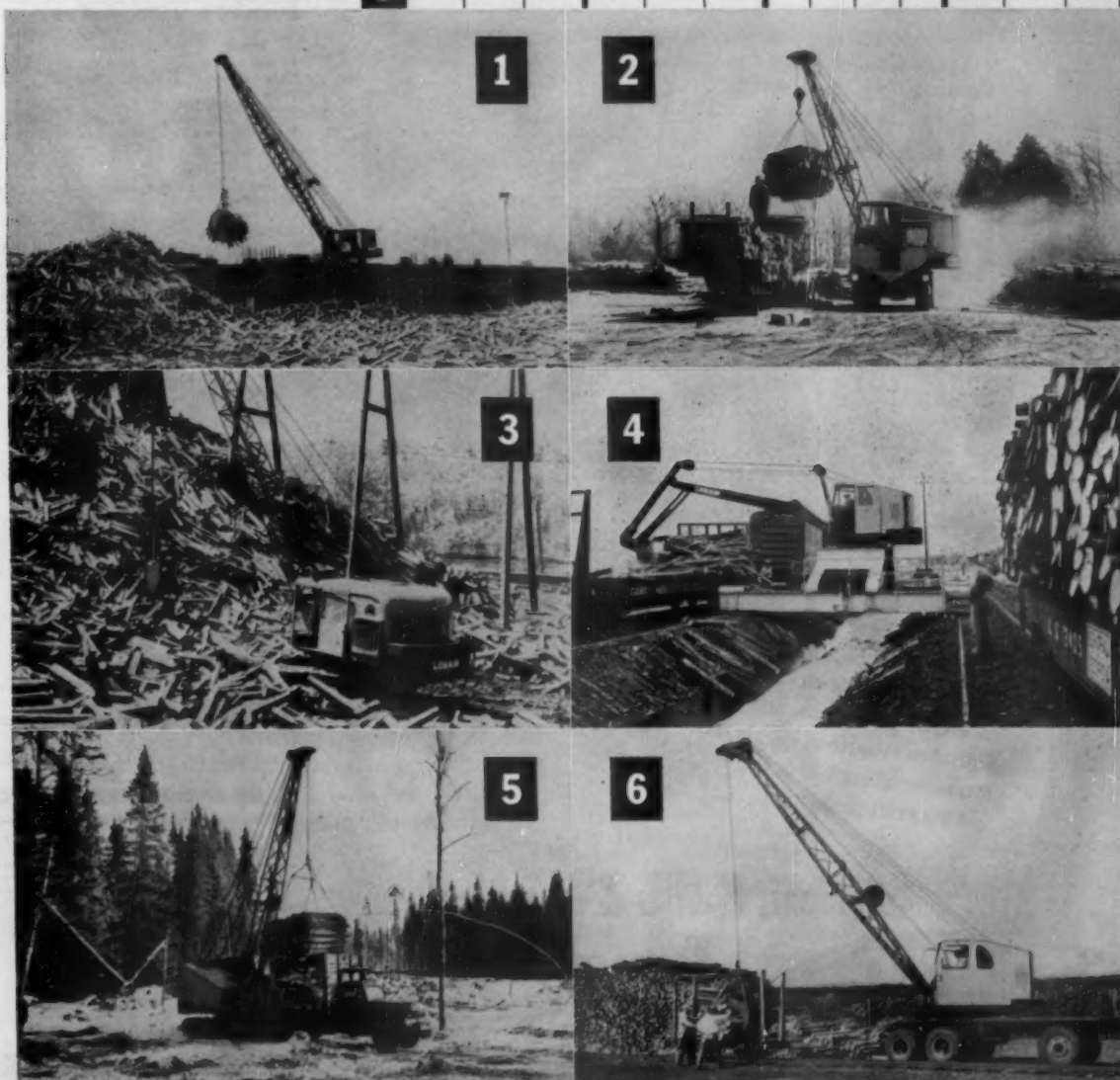
* Latest years estimates gathered by PULP & PAPER. All other figures from Southern and Southeast Forest Experiment Stations of U. S. Forest Service.

CHECK LIST FOR PULPWOOD HANDLING

If handling pulpwood is one of your operations, you will want to check the chart at the right. Look under the location of the job—the kind of wood—the device needed—and the mounting required. You'll be referred to a picture below that shows how Lorains have already solved the problem. Your problem, too, can be solved with a Lorain. Ask your nearby Thew-Lorain Distributor to help you.

THE THEW SHOVEL CO., LORAIN, OHIO

SEE PHOTO	LOCATION			KIND OF WOOD			DEVICES				MOUNTINGS		
	WOODS	YARDS	MILLS	STACKED WOOD	WET WOOD	JACK STRAWED	SLINGS	GRABS	GRAPPLES	RAKES	CRAWLER	RUBBER TIRE	SPECIAL
1		✓			✓	✓		✓			✓		
2		✓		✓			✓					✓	
3			✓			✓		✓			✓		
4			✓	✓						✓			✓
5	✓			✓			✓				✓		
6			✓	✓					✓			✓	



THEW-LORAIN

1954 PULPWOOD PRODUCTION IN THE SOUTH

By State and Species Group
(In thousands of cords)

	Pine	Hard- wood*	Total	% Change from 1953
Ala.	1,764.9	67.0	1,831.9	+3.8
Ark.	725.6	100.7	826.3	+5.8
Fla.	1,661.2	.4	1,661.6	—8
Ca.	2,879.9	177.6	3,057.5	+6.2
La.	1,265.2	239.0	1,504.2	+9.4
Miss.	1,217.4	746.4	1,963.8	+2.1
N. C.	1,228.9	278.5	1,507.4	—1.4
Okla.	33.0	..	33.0	—19.5
S. C.	1,160.5	170.4	1,330.9	—8.0
Tenn.	134.1	106.2	240.3	+2.6
Tex.	1,003.6	50.7	1,054.3	—12.9
Va.	1,033.7	224.7	1,258.4	—7
Total	14,108.0	2,161.6	16,269.6	+9

* Includes 32,800 cords of chestnut used for pulp.

In addition to rough round pulpwood reported above, 126,163 cords of wood residues were obtained from other forest industry plants (80,500 cords sawmill chips, 45,663 cords veneer cores, etc.).

U.S. SOUTH-PULPWOOD

Receipts—Consumption—Inventories

Yr.	(In Thousands of Cords)			Yr. End Invent.
	Domestic	Imports	Total	
1941 ...	6,400	..	6,400	6,227 334
1943 ...	6,505	..	6,505	6,342 293
1945 ...	7,153	..	7,153	7,208 145
1947 ...	8,227	..	8,227	8,395 291
1949 ...	9,060	..	9,060	9,255 670
1950 ...	11,543	..	11,543	11,480 753
1951 ...	12,844	..	12,844	12,854 772
1952 ...	13,381	..	13,381	13,350 856
1953 ...	14,959	..	14,959	14,752 1,089
1954 ...	14,962	..	14,962	15,014 1,048

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

Pacific Coast and Rocky Mts. Wood Survey

Periodic pulpwood surveys in Washington, Oregon, North Idaho and Montana have long been features of this Review Number, and are prepared for PULP & PAPER by the Forest Economics divisions of the Pacific Northwest and Northern Rocky Mountain Forest and Range Experiment

Stations of the U. S. Forest Service, Portland, Ore., and Missoula, Mont.

The estimates of the cu. ft. volume of the pulp species in the Douglas-fir sub-region of western Washington and western Oregon are based on Forest Survey inventories of the forest resources of the 38 counties in the subregion. The initial inventories of these counties were conducted in the period 1930-34. Between 1937 and 1954 reinventories were made of 37 of these counties; in addition a second reinventory has been made of the following 11 counties: Clatsop, Columbia, and Coos in Oregon, and Clark, Cowlitz, Grays Harbor, Lewis, Mason, Pacific, Thurston, and Wahkiakum in Wash.

Western Washington and Western Oregon Pulpwood Species, 1954

Volume in millions of cubic feet¹ of pulpwood, other than Douglas-fir in western Oregon and western Washington available for cutting² by species.* (In addition to these species there are about 60 billion cu. ft. of Douglas-fir available in Douglas-fir subregion.)

Species	West. Oregon	West. Wash.	Total
Western Hemlock	4,835	15,083	19,919
Sitka spruce	480	973	1,453
Balsam fir ³	3,941	6,355	10,296
Mountain hemlock— Engelmann spruce	610	345	955
Black cottonwood	32	133	165
Total	9,898	22,889	32,787

¹ Includes all trees 4 inches and larger, diameter breast height.

² Excludes timber reserved from cutting in municipal, State, and Federal ownership.

³ Compiled by Pacific Northwest Forest and Range Experiment Station from Forest Survey data adjusted for cutting depletion and growth to 1954.

* Includes Pacific silver fir, grand fir, noble fir, Shasta red fir, white fir, and alpine fir.

Western Oregon		Western Washington	
County	Million Cu. ft.	County	Million Cu. ft.
Benton	24	Clallam	2,404
Clackamas	1,120	Clark	44
Clatsop	895	Cowlitz	1,118
Columbia	30	Grays Harbor	3,121
Coos	762	Island	8
Curry	385	Jefferson	2,148
Douglas	1,536	King	2,000
Hood River	326	Kitsap	19
Jackson	805	Lewis	2,159
Josephine	71	Mason	435
Lane	1,200	Pacific	1,600
Lincoln	375	Pierce	1,005
Linn	1,105	San Juan	11
Marion	445	Skagit	1,518
Multnomah	125	Skamania	1,985
Polk	96	Snohomish	2,052
Tillamook	550	Thurston	38
Washington	35	Wahkiakum	372
Yamhill	13	Whatcom	852
Total	9,898	Total	22,889

INLAND EMPIRE PULPWOOD*

Data for Northeastern Washington was revised last in 1949. Data for Western Montana revised last in 1951. Approved by USFS as essentially up-to-date in 1955.

Subregion†	Engel- mann Spruce	Hem- lock	Bal- sam Fir	Cotton- wood- Aspen	Total
Million Cubic Feet					
N. E. Washington	63	124	139	18	346
N. Idaho	608	386	1,697	10	2,701
W. Montana	826	56	253	50	1,185
North Idaho	860	506	2,496	39	3,901
Total	2,359	1,072	4,585	117	8,133

Source: Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Economics, Missoula, Mont.

* The sound volume inside bark of trees larger than 5.0 inches d.b.h. from stump to 4- to 6-inch top diameter.
† Northeast Wash. consists of Ferry, Lincoln, Pend Oreille, Spokane, Stevens and Whitman Counties; North Idaho is north of Salmon River; western Montana is west of Continental Divide.

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A new Appleton supercalender to increase production.
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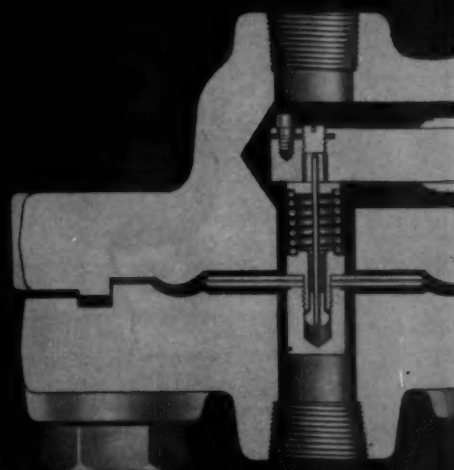
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platform. Operates at 1800 f.p.m.

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Operates at 3500 f.p.m.



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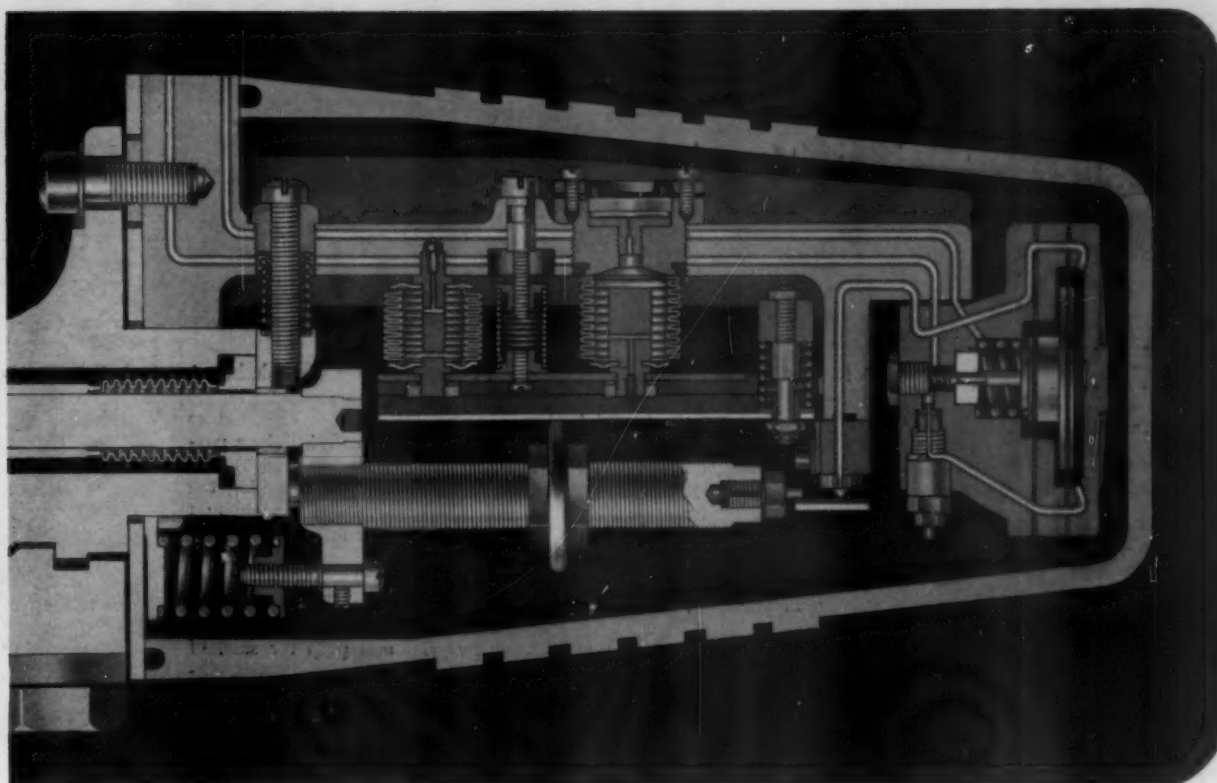
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- ▶ Damping unit is *sealed* — damping fluid cannot be lost in any position of the instrument.
- ▶ Heavy section mechanism frame bolted directly to diaphragm housing, and cover mounted to a floating plate, eliminating distortion due to outside forces acting on case.
- ▶ Diaphragm housing is rugged AISI Type 316 stainless steel forging; avoids possibility of distortion from piping.
- ▶ Self-aligning, friction-free flexure bearings of beryllium copper for greater strength.
- ▶ Mounting is on diaphragm housing — point of greatest mass — insuring sturdy installation (see illustration at right).
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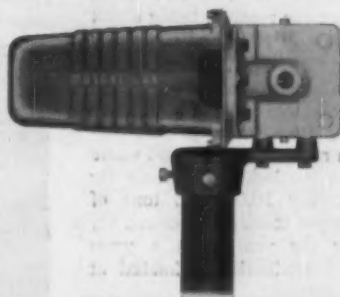
- ▶ Extra heavy primary beam minimizes bending.
- ▶ Drain connections at lowest point in diaphragm housing; vent connections at highest point in diaphragm housing — insures proper venting and complete drainage of condensate on both high and low sides.
- ▶ Materials selected for maximum strength and accuracy with highest corrosion resistance and minimum temperature error (1% per 100°F ambient temperature change).
- ▶ These and other design features make Mason-Neilan Model 4800 Differential Pressure Transmitters outstanding among instruments of this type. Write for complete information.



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Ambient Temperature Rating — minus 30°F to plus 180°F
Weight — approximately 30 lb.
Pressure Connections — 1/2" NPT internal
Air Supply — 20 psi
Output — 3-15 psi



NORTH AMERICA

CANADA

A New Burst of Expansion As Total Exports Lead World

Population: 14,000,000; Per capita paper consumption: 280.3 lbs.

Paper mills: 94; Woodpulp mills: 34;
Other fiber pulp mills: 2

Production (short tons)	1954	1953
Paper	642,000	6,819,840
Chemical woodpulp	4,117,341	3,740,123
Mechanical wood-		
pulp	5,279,126	5,056,114
Newsprint	5,984,207	5,721,296
Woodpulp exports	2,000,000	1,956,280

Principal paper grades made: Newsprint, kraft, and sulfite papers, book and fine papers, paperboard

Principal exports to: U.S., United Kingdom, British Commonwealth

• A new burst of expansion sparked the industry in Canada during the past year, reflecting continued profitable operation. Many companies made plans for increasing their capacity, some with new mills. Latest figures show Canada's 1954 paper production was 7,642,000 short tons; total paper exports, 5,661,000 tons.

Total output of Canada's mills broke all tonnage records, being about 5% higher than in 1953 and exceeding the previous top year, 1951, by 2%. Total woodpulp production amounted to about 9,500,000 tons, and an additional 400,000 tons of pulp were produced from rags, straw, flax and waste paper. Thus the industry was not far short of having 10,000,000 tons of pulp and paper tonnage produced for sale during the year, with a gross value of all production estimated at \$1,200,000,000.

While exports of high alpha and unbleached sulfite pulps remained at approximately the 1953 levels, exports of all other grades increased, and Canada as usual led all producing countries in total volume of pulp and paper exports. Exports of bleached chemical grades were about 23% higher last year than in 1953, total exports of all pulps approximating 2,164,000 tons, slightly less than in the all-time record 1951.

MORE NEWSPRINT THAN EVER BEFORE—Major sector of the industry is represented by the newsprint mills which account for more than 60% of the nation's tonnage. More paper was produced by them in 1954 than ever before, and output will be further increased in the near future, with several companies speeding up their machines, others expanding their present mills or, in one case, building a new plant.

Newsprint production last year was 5,984,207 tons, beating the previous high in 1953 by some 200,000 tons. Newsprint exports exceeded 5,500,000 tons, a record, with exports to the U.S. fractionally higher than in the previous year. The big gain was in shipments overseas—some 675,000 tons, compared with 473,000 tons in the preceding year, this being a continuation of a five-year trend. Overseas newsprint exports from Canada are now more than three times as great as they were in 1950; in other words, nearly back to their pre-war volume.

Exchange rates play an important part in the economics of newsprint. When the Canadian dollar is at a premium in terms of U.S. funds, the return to the Canadian mills is less than when it is on even terms or val-

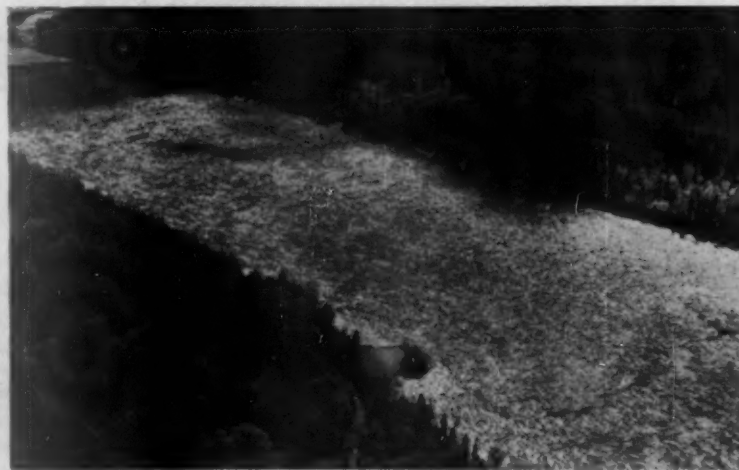
ued at less than the U.S. dollar. A return to a closer relationship with the U.S. dollar this year is expected to benefit the Canadian mills since payment is made in U.S. funds and these for a considerable period during the past two years had been at a discount in Canada of 4% or more.

Again in 1954, paperboard and papers other than newsprint together accounted for some 17% of the total output of the Canadian industry. Unlike newsprint and pulp for sale, of which more than 90% is exported, currently more than 90% of this production is consumed in the domestic market.

Total output of the paperboard mills during the year was about 740,000 tons, fractionally higher than in the previous year. Output of fine paper mills was about 6% more than in 1953, and in the first quarter of 1955 it was substantially higher than in the corresponding period a year ago. Wrapping paper output was up 3%.

Employment in the mills was well above the 1953 level, and the industry generally enjoyed a year of relative stability.

CHANGES IN WOODS PICTURE—Woodlands operations exceeded those



End of 4-Mile Log Jam on Gatineau River in Canada

One of North America's greatest pulpwood riverways, it carries 12% million logs annually to International and Eddy mills.



Loading Canada's No. 1 Export

Here is a deepsea ship taking on cargo of newsprint at Powell River Co. mill in British Columbia. Newsprint is Canada's most important export commodity, and last year, of a total production of 5,900,000 tons in Canadian mills, about 5,500,000 tons were

exported. Since 1946 these mills have increased capacity by 1,400,000 tons, mostly by improvement of existing machines. Powell River is regarded as biggest single-unit newsprint mill in the world.

of 1953, the pulpwood consumption being about 12,000,000 cords, total cut about 13,500,000 cords. In 1952 and 1953 the total consumption of pulpwood in Canada was about 11,600,000 cords each year, the mills normally buying about a third of their requirements. In 1954 they bought about 32% of their pulpwood, compared with 29% in 1953.

Exports of pulpwood declined again, the 1,700,000 cords shipped apparently being the least since 1949.

There has been a growing recognition of the importance of planned forest management in Canada, and good progress was made in this direction last year, with federal and provincial governments cooperating with industry on several long-term programs combining practical conservation with provision of adequate pulpwood stocks. Reforestation is being carried out fairly extensively in British Columbia and Ontario.

A systematic campaign against budworm infestation in Quebec and New Brunswick has been getting results, and in general fires have been far less costly than they were a few

years ago, partly due to weather, but the extensive precautions taken by the industry and forest services and the improvement in technical apparatus and methods have been responsible, too, for the reduced hazard.

MAJOR EXPANSION PROJECTS—

Nowhere in the world is expansion proceeding at a greater pace, apparently, than in Canada, particularly the Far Western provinces. Crown Zellerbach, Powell River and MacMillan & Bloedel are all three installing additional big newsprint machines at Duncan Bay, Powell River and Port Alberni, B.C., respectively. St. Regis is pioneering continuous cooking by the Kamy process at its \$35,000,000 market bleached kraft pulp mill subsidiary in Hinton, Alta.

B. C. Forest Products, Ltd., long in forest products fields, is entering the market bleached kraft pulp field with a 250 ton mill at Crofton, B.C., and MacMillan is adding bleaching and pulping capacities at Port Alberni, as well as a board mill. Dryden Paper is also building a bleached kraft pulp mill at Dryden, Ont., Richmond Pulp

& Paper added to newsprint capacity in Quebec, and Rayonier is expanding its subsidiary Port Alice, B.C., mill. Canadian International was soon to start up its board mill at LaTuque, Que., and bought one big container plant and is building another. West Virginia, through its Hinde & Dauch subsidiary, is also expanding in board in Canada and at least one new tissue machine was ordered for the Dominion.

Expansion proceeds at Manitoba Paper, Ontario & Minnesota, Bowaters Newfoundland, Anglo-Canadian and St. Lawrence just upped newsprint and kraft paper at two mills.

CANADIANS HAVE WORRIES, TOO—

In midst of all this, a surprise disappointment to Canada was International Paper's decision to go to Alabama, U.S.A., for its next big newsprint mill. It still makes over 2,800 tons a day in three Canadian mills, however. But rising costs in woods and mills, freight rates, and French-Canadian religious barriers that kept machines idle one day a week in many mills—these problems

worried Canadians in 1955.

Their \$250,000,000-a-year freight bill was like a ball and chain on the industry. River logging was fast becoming obsolete and trucks, tractors and mechanized equipment were necessary investments. Their slower growing trees, compared to the South of United States, (105 years to 35 years, said one Canadian company president, a bit ruefully), were a handicap that sometimes had to be reckoned with. Yet the vast untouched forest resource of Canada was assurance that pulp and paper will continue to be Canada's No. 1 industry for many years to come.

Canadian industry leadership continued to campaign for a lowering of U.S. paper tariffs, and passage of President Eisenhower's bill giving him broad tariff removal powers by the American Congress definitely brightened the Canadian prospects for this. Would this lead to production of more fine or higher grade papers in Canada?

A word of caution came from R. M. Fowler, permanent president of the Canadian Pulp & Paper Association, however: "Our overall cost position in Canada has reached a point of balance, and what we do about it will determine whether the industry continues upward or turns downward."

American-born Capt. Arthur A. Schmon, artillery officer on World War I battlefields in France under the late Col. R. R. McCormick, Chicago Tribune editor and publisher, and his long time friend, became the new chairman of the executive board of CPPA. Later in the year, after the Colonel's death, he became one of five trustees of his huge estate, as well as continuing as president of the Canadian subsidiaries, including the Ontario Paper and Quebec North Shore Paper Cos.

CANADIAN FORESTS— 1955 REVISION

	Square Miles
Forested Areas of Canada*	1,485,038
(All except 123,000 square miles, lies within the ten provinces.)	
Forested Areas Claimed as Unproductive (Small trees in adverse locations not expected to reach merchantable size.)	658,708
Productive Forest Areas	826,330
(Capable of producing continuous crops of timber.)	
Productive Forest Not Presently Accessible	248,969
Accessible Productive Forests	577,361
(Two-fifths bears trees large enough for use; the remainder in younger growth.)	
Privately Owned Forests	
Farm wood lots	35,594
Others	67,988
	103,582
Cutting Rights Leased by the Crown:	
Pulp and paper licenses	182,840
Saw timber licenses	33,186
Timber sales	4,160
Permit berths	704
	221,090

* Excluding Labrador.

Source: Federal Forestry Branch.

FIGURES FOR 1954 ON CANADIAN PRODUCTION

	Production		Exports	
	1954	1953	1954	1953
Gross value of output	\$1.2 billion	\$1.1 billion	\$915 million	\$876 million
	Tons	Tons	Tons	Tons
Total wood pulp	9,497,182	8,904,256	2,173,126	1,955,549
Dissolving & Spec. chem.	455,585	452,806	391,557	410,527
Bleached sulfite paper grades	529,065	418,252	330,945	247,425
Unbleached sulfite	1,605,568	1,551,097	354,852	340,657
Bleached sulfate	723,809	601,109	617,122	522,038
Unbleached sulfate	637,937	593,012	196,694	170,162
Other chemical	165,377	122,500	37,598	34,457
Groundwood	5,279,126	5,065,080	233,332	221,578
Newsprint	5,984,207	5,721,296	5,549,565	5,334,287
Containerboard	360,403	371,744	14,237	25,104
Boxboard	377,845	367,633	27,900	25,760
Total paperboard	738,248	739,377	42,137	50,864
Fine paper	206,338	195,984	12,965	10,999
Coated paper	24,816	23,375	674	1,078
Other printing paper	63,043	54,348	35,141	30,685
Special papers	101,798	93,690	3,793	2,222
Wrapping paper	246,197	238,147	12,738	9,096
Bld'g papers & boards	277,000	193,000	4,000	4,000

There are some slight duplications in the foregoing figures. Some paperboard and wrapping paper is used by the mills for packaging. Coated paper covers a tonnage that undergoes a further processing after it leaves the paper machine and thus is also included under other grades. Total wood pulp production includes screenings, but excludes debarked and exploded pulp. In addition to woodpulp, the industry uses annually some 412,000 tons of other stock in the manufacture of paper including about 315,000 tons of waste paper, 30,000 tons of straw, 40,000 tons of rags and cotton linters, and 7,000 tons of flax, leather, jute, rope, and other fibres.

Source: Canadian Pulp and Paper Association.

CANADA PULP MADE FOR SALE (Latest data available)

Grades of Pulp	Total Tons		Selling value at mill		Ave. Value Per Ton	
	1952	1953	1952	1953	1952	1953
Groundwood pulp						
Bleached	21,483	37,709	\$ 1,981,136	\$ 2,679,590	\$ 92.22	\$ 71.06
Unbleached	181,247	147,185	13,739,465	8,941,721	75.81	60.75
Sulfite, bleached						
Dissolving	327,032	357,300	59,934,633	63,371,379	183.27	177.36
For chemical conversion	12,217	5,589	1,880,755	668,714	153.95	119.65
Paper grades	193,613	207,967	30,496,087	26,805,141	157.51	128.89
Sulfite, unbleached						
Strong	223,527	193,615	29,960,651	22,020,339	134.04	113.73
News Grade	175,443	113,285	24,217,190	12,344,511	138.03	108.08
Sulfate						
Bleached	211,314	264,315	33,790,990	36,648,403	159.91	138.55
Semi-bleached	1,223	8,051	144,164	1,022,625	117.88	127.04
Unbleached	153,219	179,781	21,311,575	16,750,983	139.09	93.19
Screenings, chemical						
Sulfite	17,595	12,247	549,382	458,837	43.62	37.47
Sulfate	1,195	1,419	81,540	85,335	68.23	60.14
Screenings, mechanical						
Sulfite	2,709	4,634	58,108	102,070	21.45	22.05
All other pulp	34,724	39,909	4,728,426	4,855,728	136.17	121.67
Total	1,351,541	1,572,976	\$222,874,108	\$196,635,376	\$143.63	\$125.02

CONIFEROUS STANDS

Estimated Stands of Accessible Conifers by Provinces	Millions of cubic feet		Pulp Production Tons—1951
	1951	1952	
Newfoundland*	3,357	†	
Prince Edward Island	61	†	
Nova Scotia	2,939	†	
New Brunswick	6,100	†	
Quebec	45,928	4,282,568	
Ontario	54,589	2,484,551	
Manitoba	1,004	†	
Saskatchewan	5,147	†	
Alberta	7,724	†	
British Columbia	106,668	1,070,863	
Nfld., N.S., N.B. and Manitoba	1,319,623		
	232,375	9,077,063	

† Figures for Nfld., N.S., N.B. and Manitoba are not published separately.

* Excluding Labrador.
Source: Federal Forestry Branch and Dominion Bureau of Statistics.

FOREST CONSUMPTION

Average Annual Depletion 1943-1952*	000's of cu. ft.		% %	
	1943-1952	1953	1943-1952	1953
Lops and bolts for domestic use	1,166,800	1,166,800	31.4	38.5
Lops and bolts for export	11,589	11,589	0.3	0.4
Pulpwood for domestic use	811,087	811,087	21.8	26.8
Pulpwood for export	166,424	166,424	4.5	5.5
Fuelwood	766,956	766,956	20.6	23.3
Ties, poles, pit-props, posts, rails	70,620	70,620	1.9	2.3
Miscellaneous	36,834	36,834	1.0	1.2
Fire	190,948	190,948		
Insects and disease	500,000	500,000	18.5	
	3,721,258	3,721,258	100.0	

* Island of Newfoundland, but not Labrador, included since 1949.
Source: Federal Forestry Branch.

Statistical Tables Canadian Pulp and Paper Industry ... 1955

Canadian Forests—1955	156
1954 Canadian Production	156
Canada Pulp for Sale	156
Coniferous Stands	156
Forest Consumption	156
Newsprint Capacity	157
Newsprint Exports	157
Pulpwood Production by Provinces	157
Principal Statistics	157
Canadian Paper Production	157
Paper Production by Provinces	157
Woodpulp Production by Provinces	157
Pulp and Paper Payroll Data	158
Canadian Pulpwood	158
Canadian Staple Fiber	158
Mill Locations	158
Pulp Production	158
Pulp Exports	158
Eastern Canadian Pulpwood	158
Forest Resources	158

CANADIAN NEWSPRINT CAPACITY AND PRODUCTION

In thousands of short tons			
	Rated Capacity	Idle Capacity	Operat- ing %
1925	1,715	193	88.8
1930	3,600	1,096	69.6
1935	3,914	1,163	70.3
1940	4,368	949	78.3
1945	4,301	1,042	75.8
1947	4,350	nil	101.1
1948	4,478	nil	102.2
1949	5,113	nil	101.2
1950	5,227	nil	100.9
1951	5,360	nil	100.7
1952	5,510	nil	102.9
1953	5,723	nil	100.
1954	5,920	nil	101.0
1955*	6,040	nil	—

* Estimated by Newsprint Association of Canada

NEWSPRINT EXPORTS FROM CANADA

(SHORT TONS)			
	U.S.A.	Overseas	Total
1935	2,052,000	523,000	2,575,000
1940	2,586,000	657,000	3,243,000
1945	2,534,000	525,000	3,059,000
1948	3,917,366	410,718	4,328,084
1949	4,354,000	440,000	4,798,000
1950	4,724,000	214,000	4,938,000
1951	4,790,000	375,000	5,165,000
1952	4,835,000	463,000	5,666,000
1953	4,885,000	455,000	5,720,000
1954	4,878,085	659,340	5,537,425

Including Newfoundland since April, 1949.

PULPWOOD PRODUCTION FOR CANADA BY PROVINCES

	1953	1954*
Quebec:		
Cords	6,522,156	6,600,000
Value	\$187,892,748	\$190,000,000
Ontario:		
Cords	3,332,394	3,350,500
Value	\$92,407,717	\$95,500,000
British Columbia:		
Cords	1,000,929	1,200,000
Value	\$28,011,950	\$30,000,000
Other provinces:		
Cords	2,525,337	2,600,000
Value	\$62,599,549	\$65,000,000
All Canada:		
Cords	13,380,816	13,750,000
Value	\$370,912,264	\$380,000,000

* Estimate by PULP & PAPER.

PRINCIPAL STATISTICS OF CANADIAN PULP AND PAPER INDUSTRY

Year	Establish- ments	Capital	Em- ployees	Salaries and Wages	Fuel and electricity purchased	Materials and supplies used	Gross value of products
	No.	\$	No.	\$	\$	\$	\$
1919	99	275,767,364	26,647	32,264,208	12,503,197	54,084,801	137,912,502
1925	114	460,397,772	28,031	38,560,905	17,506,735	76,514,990	193,092,937
1931	103	630,176,540	26,669	34,792,013	22,927,919	63,947,678	174,733,954
1937	98	570,352,287	33,205	48,757,795	29,121,065	91,121,629	226,244,711
1943	106	667,453,143	37,020	71,199,422	36,211,064	143,956,462	345,653,470
1948	117	1,100,000,000	51,924	151,662,761	41,365,665	274,553,791	825,857,664
1949	123	1,100,000,000	52,050	157,703,868	41,370,633	272,681,606	836,148,393
1950	124	1,150,000,000	52,343	169,246,531	44,440,376	289,548,301	954,137,651
1951	126	1,200,000,000	57,291	213,169,906	75,625,718	421,280,139	1,237,897,470
1952	128	1,250,000,000	57,803	225,353,327	76,739,757	497,046,828	1,157,887,657
1953	127	1,300,000,000	58,194	235,741,660	80,379,515	499,350,994	1,179,934,934
1954*	127	1,400,000,000		240,000,000	82,000,000	510,000,000	1,350,000,000

* Estimated.

CANADIAN PAPER PRODUCTION

Newsprint		Total Paper	
Tons	\$ Value	Tons	\$ Value
1917	689,847	853,689	58,750,341
1929	2,725,331	3,197,149	192,989,252
1932	1,919,205	2,299,767	114,115,570
1941	3,519,733	4,524,776	241,450,292
1945	3,324,039	4,359,576	282,837,614
1948	4,640,336	6,063,646	582,346,000
1950	5,318,988	6,812,035	710,153,826
1951	5,516,279	7,225,271	824,029,649
1952	5,687,051	7,201,800	838,105,108
1953	5,707,030	7,376,000	887,858,473
1954*	5,984,207	7,642,000	920,000,000

Source: Dominion Bureau of Statistics.

* Estimated by PULP & PAPER.

CANADIAN PAPER PRODUCTION BY PROVINCES

(Quantity in Tons—Value in Dollars)

	Quebec	Ontario	British Columbia	Other Provinces	TOTAL
1945 Tons	2,292,442	1,267,796	334,502	464,836	4,359,576
1945 Value	\$148,180,691	\$86,395,223	\$20,353,984	\$27,907,716	\$282,837,614
1948 Tons	3,240,623	1,837,510	425,104	560,409	6,063,646
1948 Value	\$303,691,283	\$187,182,675	\$40,317,091	\$51,155,793	\$582,346,842
1950 Tons	3,315,631	1,903,721	498,286	1,094,397	6,812,035
1950 Value	\$339,748,513	\$211,416,005	\$52,845,416	\$106,143,892	\$710,153,826
1951 Tons	3,511,669	2,019,235	513,165	1,181,202	7,225,271
1951 Value	\$389,554,493	\$251,918,611	\$59,763,061	\$122,793,484	\$824,029,649
1952 Tons	3,515,193	1,963,403	540,140	1,183,064	7,201,800
1952 Value	\$400,663,379	\$246,215,714	\$62,261,263	\$128,964,752	\$838,105,108
1953 Tons	3,542,987	2,018,843	632,556	1,182,140	7,376,526
1953 Value	\$416,505,144	\$263,409,878	\$74,131,677	\$133,811,774	\$887,858,473
1954 Tons*	3,600,000	2,100,000	650,000	1,200,000	7,550,000
1954 Value*	\$420,000,000	\$270,000,000	\$80,000,000	\$138,000,000	\$908,000,000

Source: Dominion Bureau of Statistics.

* Estimate by PULP & PAPER.

CANADIAN WOODPULP PRODUCTION BY PROVINCES

(Quantity in Tons—Value in Dollars)

	Quebec	Ontario	British Columbia	Other Provinces	TOTAL
1945 Tons	2,887,176	1,468,682	520,571	724,385	5,600,841
1945 Value	\$114,197,036	\$62,596,260	\$21,998,381	\$33,061,445	\$231,873,122
1948 Tons	3,902,072	2,226,124	688,209	858,674	7,674,079
1948 Value	\$227,425,545	\$153,870,832	\$49,220,655	\$55,446,132	\$485,966,104
1949 Tons	3,698,401	2,135,444	666,542	1,349,611	7,852,998
1949 Value	\$196,568,691	\$140,662,434	\$36,737,722	\$71,169,647	\$445,138,494
1950 Tons	3,922,543	2,297,518	776,896	1,476,067	8,147,014
1950 Value	\$216,299,900	\$156,390,753	\$49,381,923	\$80,511,349	\$502,583,925
1951 Tons	4,282,568	2,484,551	924,154	1,623,576	9,314,849
1951 Value	\$298,100,313	\$219,571,231	\$100,898,418	\$109,310,043	\$727,880,005
1952 Tons	4,192,047	2,308,722	915,634	1,552,066	8,968,009
1952 Value	\$280,314,341	\$182,773,000	\$82,551,730	\$104,382,109	\$650,021,180
1953 Tons	4,163,068	2,323,509	1,070,863	1,552,066	9,077,063
1953 Value	\$265,937,385	\$177,713,471	\$84,658,292	\$104,382,109	\$624,863,504
1954 Tons*	4,220,000	2,400,000	1,150,000	1,600,000	9,370,000
1954 Value*	\$290,000,000	\$180,000,000	\$90,000,000	\$106,000,000	\$666,000,000

Source: Dominion Bureau of Statistics.

* Estimate by PULP & PAPER.

CANADIAN PULP AND PAPER PAYROLL DATA

	Total Employees	Employees On Salary	Average Salary	Employees On Wages	Average *Wage	Total Salaries- Wages
1920.....	31,298	2,669	\$2,449	28,629	\$1,352	\$ 45,253,893
1939.....	31,016	4,382	\$2,482	26,634	\$1,271	\$ 44,737,739
1943.....	37,020	5,384	\$2,723	31,636	\$1,787	\$ 71,199,422
1947.....	49,946	7,706	\$3,411	42,240	\$2,443	\$129,477,995
1950.....	52,343	8,578	\$4,183	43,765	\$3,051	\$169,246,531
1951.....	57,291	9,413	\$4,800	47,878	\$3,899	\$213,164,906
1952.....	57,291	9,493	\$5,069	47,798	\$3,899	\$229,000,000
1953.....	58,194	9,394	\$5,315	48,800	\$3,808	\$235,741,660
1954**.....	58,500	9,680	\$5,325	50,000	\$3,900	\$240,000,000

* Woods labor not included.

** Estimate by PULP & PAPER.

Source: Dominion Bureau of Statistics.

MILL LOCATIONS

	Pulp Mills	Pulp & Paper Mills	Paper Mills	Total
Newfoundland ...	1	2	..	3
Nova Scotia	2	2	..	4
New Brunswick ..	4	3	..	7
Quebec	12	34	9	55
Ontario	9	19	15	43
Manitoba .....	..	3	..	3
British Columbia ..	6	6	..	12
Canada	34	69	24	127

Source: Dominion Bureau of Statistics

CANADIAN PULPWOOD

(In cords)

Year	Production	Consumption	Exports	Imports
1921.....	3,273,131	2,180,578	1,092,522	....
1925.....	5,092,461	3,668,959	1,423,502	....
1930.....	5,977,183	4,741,349	1,330,466	94,632
1935.....	6,095,016	5,005,083	1,109,873	19,940
1940.....	8,499,922	6,996,119	1,551,429	47,626
1945.....	9,145,673	7,478,508	1,671,296	4,133
1946.....	10,523,256	8,684,756	1,855,381	16,881
1947.....	11,484,522	9,551,050	1,983,980	50,508
1948.....	12,497,926	10,256,549	2,317,346	75,969
1949.....	11,850,254	10,237,976	1,612,278	5,491
1950.....	12,873,476	11,138,578	1,734,898	28,220
1951.....	15,053,910	12,554,064	2,871,173	41,000
1952.....	14,102,670	11,609,407	2,493,263	30,784
1953.....	13,380,816	11,680,418	1,749,203	48,805
1954*.....	13,500,000	12,000,000	1,700,000	45,000

Imports not reported prior to 1928.

Source: Dominion Bureau of Statistics.

* Estimated by PULP & PAPER.

CANADA—PULP PRODUCTION

(Tons of 2,000 lbs.)

	Mechanical Tons	Sulfite Tons	Alkaline Tons	Total Tons
1920.....	1,090,114	654,273	188,487	1,922,774
1925.....	1,621,917	842,785	242,207	2,706,909
1930.....	2,283,130	1,076,804	188,253	3,548,187
1935.....	2,458,000	1,025,000	206,000	3,689,000
1940.....	3,305,484	1,480,545	399,267	5,290,762
1945.....	3,341,920	1,639,684	478,740	5,460,344
1946.....	3,997,848	1,830,017	562,233	6,390,098
1947.....	4,275,269	2,027,532	689,435	6,992,236
1948.....	4,413,513	2,138,011	815,076	7,366,600
1949.....	4,718,806	1,991,459	855,784	7,566,049
1950.....	4,910,803	2,110,773	1,053,588	8,075,164
1951.....	5,125,043	2,533,481	1,463,705	9,122,229
1952.....	5,102,000	2,367,000	1,331,000	8,800,000
1953.....	5,122,537	2,398,343	1,440,517	8,961,397
1954*.....	5,125,000	2,650,000	1,445,000	9,220,000

Dominion Bureau of Statistics and Canadian Pulp and Paper Association.

* Estimated by PULP & PAPER.

CANADIAN STAPLE FIBER Production and Imports

(in thousands of pounds)

	Do- mestic Viscose Delico- eries	Do- mestic Acetate Produc- tion	Do- mestic Nylon Produc- tion	Imports	Total
1939.....	—	—	—	2,701	2,701
1946.....	—	750	—	9,565	10,315
1949.....	2,064	2,050	1,000	11,131	16,265
1950.....	11,866	4,200	1,500	7,409	24,975
1951.....	10,220	4,600	1,750	18,736	35,306
1952.....	16,036	5,750	2,500	9,823	34,109
1953.....	13,846	4,996	3,000	8,018	29,814
1954.....	18,500	3,600	3,000	6,525	31,625

Source: Canadian Textile Journal.

EASTERN CANADIAN PULPWOOD PRODUCTION

(East of Rockies, including Newfoundland)

Wood-Year	Cords
1939-40.....	6,350,000
1946-47.....	9,324,000
1947-48.....	11,162,000
1948-49.....	8,840,000
1949-50.....	11,850,254
1950-51.....	12,873,476
1951-52.....	14,193,894
1952-53.....	14,152,176
1953-54.....	12,379,887

Source: Canadian Pulp and Paper Association

CANADA'S PULP EXPORTS

	Tons	Value
1921.....	527,222	\$33,133,675
1926.....	1,003,081	52,077,122
1932.....	452,292	18,930,065
1937.....	870,711	41,815,731
1942.....	1,510,727	95,266,873
1947.....	1,698,712	177,802,612
1948.....	1,796,998	211,564,384
1949.....	1,546,198	170,675,310
1950.....	1,846,143	208,555,549
1951.....	2,260,834	365,132,884
1952.....	1,902,059	291,863,498
1953.....	1,950,152	248,674,880
1954*.....	2,000,000	275,000,000

Source: Canadian Dominion Bureau of Statistics and Canadian Pulp and Paper Association.

* Estimate by PULP & PAPER.

CANADA'S FOREST RESOURCES—A NEW SURVEY—Merchantable and Accessible

Saw Timber (10" D.B.H. and Up)—in Millions of Feet Board Measure

	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia Coast	British Columbia Interior	All Canada	
Softwood	3,127	65	4,849	5,000	38,181	42,775	815	580	7,000	76,108	33,630	212,130
Hardwood	—	40	1,261	1,500	14,019	11,529	1,630	1,010	2,080	..	..	33,069
Total All Species	3,127	105	6,110	6,500	52,200	54,304	2,445	1,590	9,080	76,108	33,630	245,199
Smaller Material (4" D.B.H.) in Thousands of Cords												
Softwood	31,902	560	23,167	60,000	450,495	261,515	9,900	3,200	74,400	13,922	172,364	1,101,425
Hardwood	—	240	5,363	30,000	176,108	300,380	19,090	50,130	36,000	..	..	617,311
Total All Species	31,902	800	28,530	90,000	626,503	561,895	28,990	53,330	110,400	13,922	172,364	1,718,736

* British Columbia forests contain considerable quantities of hardwood, but no complete inventory has yet been made. Survey now being carried out is expected to be finished in 1955. Source: Dominion Forest Service.

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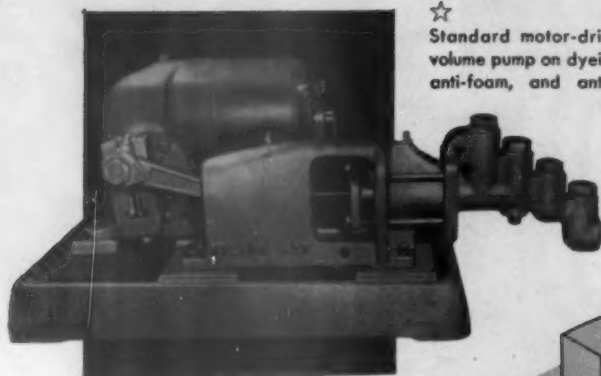
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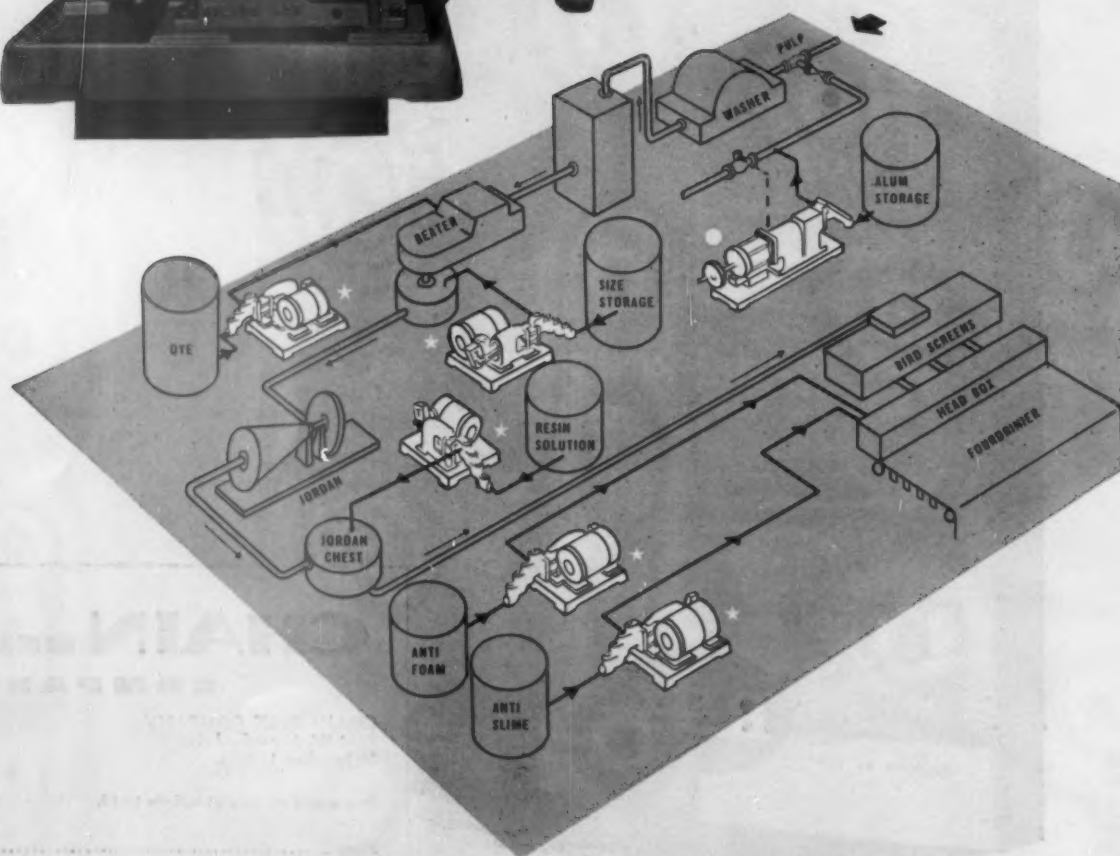
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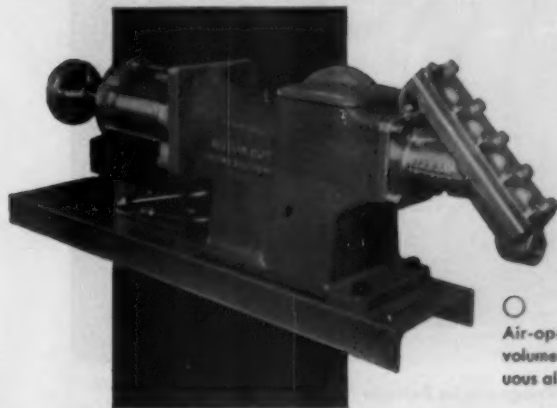
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Note, left, the many points throughout the stock preparation process where controlled volume pumps are profitably applied. Where can they do a job for you? Milton Roy offers you long experience in handling low capacity flow control problems . . . in engineering complete chemical feed and automatic control systems. Write for technical information. Or, send your problem to Milton Roy Company, *Manufacturing Engineers*, 1300 East Mermaid Lane, Philadelphia 18, Pa.

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"Controlled Volume Pumps in Paper Making."



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Air-operated controlled volume pump on continuous alum dilution service.





EUROPE

UNITED KINGDOM

Many British Companies Merge; Operations at Highest Levels

Population: 50,784,000. *Per capita paper consumption:* 164 lbs.

Paper and board mills: 209. *Woodpulp mills:* 8. *Straw, other fiber mills:* 73.

Production (short tons) 1954 1953

Paper and board* 3,391,000 2,988,260

Chemical woodpulp 15,969 7,650

Groundwood pulp 142,000 128,427

Paper, board imports 991,841 674,457

Paper, board exports 271,176 243,784

Woodpulp imports 2,149,750 1,796,784

*Does not include fiber building board.

Principal paper grades made: Book, writing, paperboard, newsprint.

Principal paper imports from: Canada, Sweden, Netherlands (strawboard).

Principal woodpulp imports from: Sweden, Norway, Finland.

Principal paper exports to: Australia, New Zealand, South Africa.

For the first time since the outbreak of World War II—16 years ago—the consumption of chemical woodpulp exceeded the pre-war peak in the United Kingdom.

Meanwhile, its paper and board industry operated at highest levels in history.

Most pulp imports came from Scandinavia but there was a strong demand for pulp from the Canadian and U.S.A. mills, for dissolving pulps and paper pulps. Total pulp imports hit a record high since pre-war years of 2,149,000 short tons (1,919,241 long tons), and showed every sign of continuing in strong demand.

The United Kingdom's 209 paper and board mills, excluding building board, made a grand total of 3,391,000 short tons (3,030,149 long tons). Of this total, 26% was book and writing grades, over 20% newsprint, nearly 27% paperboard, over 7% kraft papers, with less than 2% each of sulfite papers, tissue and cigaret paper.

This compared with 2,668,000 long tons in the previous year, or 2,988,260 short tons.

All grades contributed to this increase, but boards of various types

made an outstanding contribution increasing from 772,000 to 860,000 long tons (864,740 to 963,200 short tons). Newsprint output rose from 603,000 to 613,000 long tons (675,360 to 686,560 short tons); mechanical papers from 262,000 to 309,000 long tons (293,440 to 346,080 short tons); chemical wood papers from 144,000 to 189,000 long tons (161,280 to 211,680 short tons); esparto and straw papers from 217,000 to 269,000 long tons (243,240 to 301,280 short tons); kraft papers from 198,000 to 220,000 long tons (221,760 to 246,400 short tons); and other wrapping from 257,000 to 282,000 long tons (287,840 to 315,840 short tons).

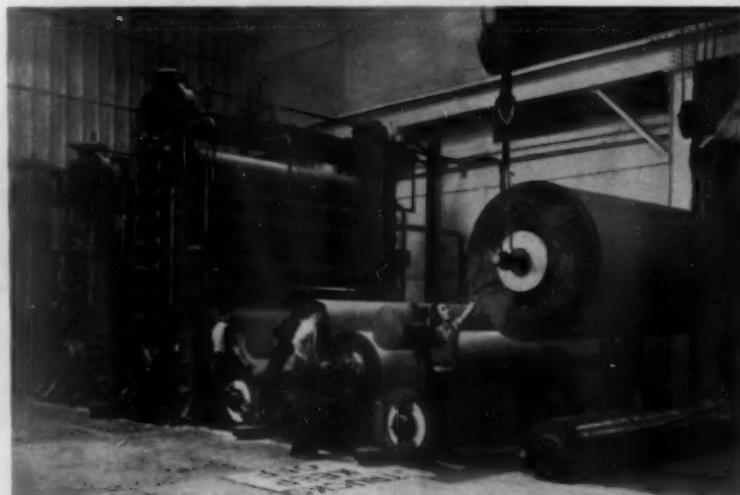
With increased currency allocations pulp and paper imports increased sharply to 96% of the 1938 level. Exports of paper and board set a new record in 1954 at 271,176 short tons valued at \$90,000,000. In volume this represented 158% of the 1938 total and compared with 243,784 tons (\$80,000,000) in 1953. Newsprint, again the largest item, showed an ad-

vance from 124,809 to 127,697 long tons.

Imports of papermaking materials rose sharply in 1954, reflecting the higher tempo of the industry's operations. The grand total, including pulp and waste paper, was over 300,000 tons above 1953. Mechanical pulp imports were up from 559,766 to 604,608 long tons, sulfite from 729,277 to 882,058 long tons and soda and sulfate from 315,211 to 432,575 long tons.

Esparto grass imports for making paper, mostly from Africa, showed a substantial rise to 310,225 tons. The increased demand for boards for packaging was largely responsible for an increase in consumption of waste paper to over 1,000,000 tons in 1954.

"SELF-CONTROLS" FOR NEWS-PRINT—A new plan for voluntary self-control by newsprint users has been discussed and may soon be finalized. It is backed by a government guarantee of a minimum import of 500,000 tons of newsprint a year, or



Part of a \$25,400,000 Program in Britain

New No. 9 Machine at the Warrington works of Thames Board Mills Ltd. The machine is 135 in. trim width multi-cylinder and is designed to produce a wide range of medium to heavy board. Built by Walmsleys (Bury) Ltd., England, it will add 50,000 tons annually to the company's capacity.



**Viewing Expansion Site
In England**

SIR ERIC BOWATER (right) head of the Bowater organization, with K. N. LINFORTH (left) Director of Operations, and SIR JOHN KEELING, visiting Mersey Mills, site of important expansion of the company in the United Kingdom. An entirely new mill is to be built adjacent to existing Mersey Mills, which operate four machines, and another new mill is to be built at the Thames Mills location. Anticipated increase in capacity is 225,000 tons of newsprint and other paper annually. A new groundwood mill at Mersey will be the second of its kind in the United Kingdom, the first being at Kemsley, and will be used primarily for processing domestic wood. Two new paper machines are to be installed at Mersey and also at Thames.

50,000 tons more than the previously allowed limit. This may mean that by Fall the popular national newspapers will be able to run 10-page issues nearly every day. The London Times opposed the scheme because it planned to switch to mechanical printing paper and run 16-page papers.

Since the end of the war a substantial modernization program has been carried through in the United Kingdom, and members of the Paper Machinery Makers Association have installed 120 new or rebuilt machines in British mills. Bowater Paper Corp. announced plans to make itself the world's biggest newsprint producer. Its Thames and Mersey mills in Britain are to have important additions, as well as those in U.S. and Canada.

Black-Clawson International Ltd. is greatly expanding facilities at Newport, Monmouthshire, to build complete machines, and its engineering-sales facilities at 23-A Maddox St., London W1.

Outstanding British expansion schemes include a \$25,400,000 program by Thames Board Mills at its Warrington works. A new 135-in. board machine has been brought into production and another machine is planned, also a new factory to produce fiberboard cases. These extensions will raise the company's capac-

ity to nearly 500,000 tons of board and 125,000,000 cases a year.

MERGERS TREND IN BRITAIN—a trend towards concentration of productive resources in large groups continues. The Reed Group announced a link-up with Colthrop Board & Paper Mills of Thatcham, Berks; an investment in Cellucotton Products, Ltd. (with Kimberly-Clark of U.S.A.) in a new factory at Aylesford for production of products from cellulose wadding; and participation on a substantial scale in the new Tasman Pulp and Paper Co. Ltd. in New Zealand.

The Inveresk Paper Group, makers of quality printings and writings, acquired Harold Jackson, Ltd., Witchampton Paper Mills Ltd., and Woodhall Paper Co. Associated Paper Mills, Ltd., purchased a well-known firm of Scottish blotting makers, Robert Craig & Sons., Ltd.

RESEARCH GOALS—In research the British Paper and Board Industry Research Association has under investigation a number of fundamental aspects of papermaking. Particular attention has been focused on the work on the mechanism of water removal on Fourdrinier machines. The investigation stems from the premise that since the early days of Bryan Donkin the wire length on a Fourdrinier has only increased approximately threefold, whereas the speed range has increased by 150 fold. Obviously, some factor other than gravity drainage must have been brought into play. Experiments have used smooth rolls, grooved rolls, and rolls designed to transmit the suction to a special measuring device. A study has also been made of the effect of running the table roll some 5% slower than the wire, and the effect of introducing an artificial resistance on the wire to simulate the presence of a pulp mat has been investigated. These demonstrated that table rolls produce suction forces proportional to the square of the speed of the wire.

From the data it can be assessed that the suction from each table roll at wire speeds approximating to 1,250 fpm, amounts to some 144 in. of water, and it is obvious that even the most modern machines do not make

full use of these tremendous suction forces. The association seeks more effective use of these forces, and to this end a large wet end section model has been designed.

The British Association has also done work on the problem of effluent disposal. This is of importance in view of legislation due to come into effect in 1958 which will impose more stringent requirements on industrial users of water. Pilot plants have been comparing efficiencies of percolating filter and surface aeration activated sludge methods for removal of b.o.d. from esparto black liquor—important to esparto pulping mills in Scotland and elsewhere.

Installation at a cost of \$14,000 of an electron microscope has enabled the association to conduct pioneer work on fiber examination by this instrument.



**In Industry News in Britain—
Pictures by PULP & PAPER Editors**

W. F. (FRED) AMIES (left), in early 1955 was appointed Manager of Tovil and Bridge Mills of Albert E. Reed & Co., Ltd., and also Gen. Mgr. and Director of Southern Paper Stock Co. He was former Chief Papermaker of Reed's London Mill, making printing, gumming, gravures, etc. He joined Reed in 1946 after 7 years with Wiggins Teape and Edward Towgood & Sons, both paper industries. He was an RAF pilot in the World War in Coastal Command and Africa and Middle East.

GEORGE F. UNDERHAY (right), Chief Technical Director of the Bowaters Corp. and its subsidiaries, was in the news this past year—he made two trips to America in just 10 months—recently to the Summer Technical Section sessions in Quebec of the Canadian Association, and last September he took a leading role in the Appleton, Wis., International Symposium on the Paper Machine, sponsored by Canadian and American technical groups with the Institute of Paper Chemistry as hosts.

UNITED KINGDOM—WOOD-PULP-PAPER

Thousands of Short Tons—Source: Board of Trade

	Consumption					Newsprint		Total Paper		
	Pulp-wood	Wood-pulp	Esparto	Rags	Straw	Waste Paper Produced	Imports	Exports	Imports	Exports
1938							491	62	1,177	193
1939						2,394				
1940	113	995	100	147	321	680	1,908	114	16	357
1941	230	1,272	386	152	93	844	2,475	199	66	509
1942	332	1,724	330	146	107	965	2,855	151	111	736
1943	n.s.	1,983	389	152	168	998	3,100	171	95	973
1944	n.s.	1,608	238	119	136	890	2,750	261	73	635
1945	n.s.	1,933	265	132	134	1,022	2,988	275	124	674
1946	n.s.	2,307	367	156	140	1,169	3,391	302	127	991



EUROPE

WEST GERMANY

Phenomenal Recovery Continues But Limited by Divided Nations

Population: 49,559,000 in West Germany and 2,193,000 in West Berlin; Per capita paper consumption: 109 lbs.
Paper mills: 330 Woodpulp mills: 23
Straw or vegetable fiber mills: 3

Production (short tons)	1954	1953
Paper	2,537,088	2,170,796
Chemical woodpulp	717,284	615,672
Mechanical woodpulp	618,555	525,343
Straw & other pulp	53,627	46,817
Paper imports	357,792	279,143
Paper exports	63,184	45,794
Woodpulp imports	466,059	364,143
Woodpulp exports	50,381	32,888

Principal paper grades made:

Newsprint	250,701
Kraft	159,894
Sulfite	662,537
Book and Writing	500,392
Paperboard	647,974
Special papers	315,590

Principal paper imports from: Finland, Sweden, Netherlands, Austria

Principal woodpulp imports from: Sweden, Finland, Austria, U.S.A.

Principal paper exports to: Netherlands, Great Britain, Denmark, Brazil

Principal woodpulp exports to: France, Italy, Netherlands, Austria

West Germany continued its phenomenal recovery to wind up 1954 with another good year. For the first time per capita paper consumption eclipsed pre-war's 105 lbs., soaring from 95 lbs. in 1953 to 109 lbs. in 1954.

Further expansion and recovery,

WEST GERMANY—PULPWOOD

(In Thousands of Cords)

	Produced	Imported	Total Received	Total Consumed
1939 (All Pre-war Germany)	1,986	930	2,916	3,390
1949 (U.S., British Zones)	876	69	945	844
1950 (West Germany)	1,082	216	1,298	1,290
1951 (West Germany)	1,364	384	1,748	1,489
1952 (West Germany)	1,074	381	1,455	1,363
1953 (West Germany)	966	294	1,260	1,461
1954 (West Germany)	1,329	470	1,799	1,682

WEST GERMANY—PAPER PRODUCTION

(In Thousands of Short Tons)

	Woodfire and Writing	News	Kraft	Total Paper (Includes other grades)	Paper Board
All Germany:					
1939	242	504	278	2,956	1,057
West Germany:					
1949	35	140	123	983	407
1950	69	187	145	1,258	464
1951	64	178	157	1,438	548
1952	68	191	111	1,382	487
1953	86	223	151	1,622	548
1954	100	251	160	1,889	648

WEST GERMANY—WOODPULP PRODUCTION

(In Thousands of Short Tons)

	For Paper Sulfite	Kraft	Rayon & Dissolving	Straw-Esparto	Total Chem.	Ground Wood
All Germany:						
1939	1,022	130	302	94	1,545	1,150
West Germany:						
1949	343	3	97	23	466	362
1950	444	1	128	36	610	435
1951	468	1	179	46	694	506
1952	425	1	135	42	603	488
1953	445	1	170	47	663	525
1954	534	—	183	54	771	645

however, is expected to be less spectacular for many reasons. Limited timber resources plus restricted Austrian timber exports will be one restraining force. West Germany's forests cover an estimated 28%, or some 25,981 sq. mi. of a total of 94,372 sq. mi. All are said to be accessible and 65% are conifer forests. A U. N. survey says 85% of the German cut

is under good forestry practices, 10% fair and 5% poor.

Lack of investment capital to modernize the industry's relatively low mechanized equipment in addition to high raw material prices are other deterrents. Thus, future emphasis will be on improving production methods to catch up with technical advances made by other industries.



So Clean, You Could "Eat Off Floor"

Drying section for lacquered papers in paper mill of Felix Schoeller Jr., Burg Gretesch, West Germany. This is one of most progressive German paper mills for making high quality papers, especially photographic papers.

MAX H. SCHMID,
President of Zell-
stoffabrik Wald-
hof, who has sent
special report to
PULP & PAPER.

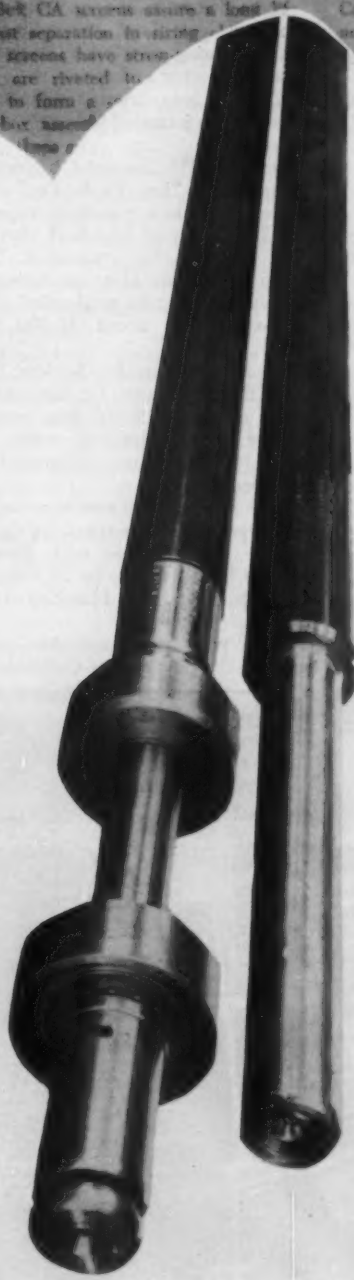


By Max H. Schmid
President, Waldhof Paper Co.

Pulp and paper production in Germany again rose considerably, just as in other European countries. The steady development of economic life involved a greater demand for paper and board, which not even the German industry could satisfy, although output was 17% higher than 1953.

Imports, consequently, increased, to about 30% above 1953 or 14% of total

The BIG NEWS is
TIDLAND WIND & UNWIND SHAFTS



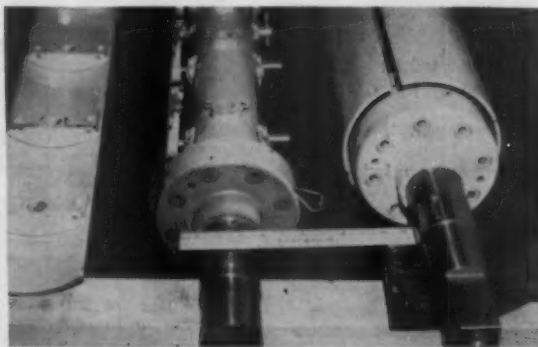
They permit faster starts, higher operating speeds . . . They eliminate sledge hammers, collars, chucks and wedges . . .

In over 130 mills Tidland pneumatic wind and unwind shafts have proved their greater efficiency. Actual time studies show production increases from 25% to 47%.

Tidland shafts are rigidly built of high grade seamless steel tubing, and are expanded by air-inflated heavy duty inner tubes. By releasing the air, shafts can be removed from finished rolls with minimum effort. No special tools needed—just an air line.

By exerting uniform pressure against the full length of rolls, Tidland shafts eliminate deflections. This makes faster starts and higher operating speeds possible.

All shafts are custom-built in any length and in diameters from 2½ inches to 24 inches, and come equipped with air hose and nozzle. Extra heavy duty shafts available.



An assembled leaf-type shaft (right) for surface rewind. Inflating tube is inside main body (center). When air is applied to valve, inner leaves transmit pressure to outer leaves (left), which expand. . . Lug shafts for unwind use the same principle, lugs being forced outward to grip roll.

For further details and estimates write or wire:

TIDLAND SHAFTS
 Manufactured by Tidland Machine Co.
 CAMAS, WASHINGTON

Represented in New England by
 ORTON CORP., Fitchburg, Mass.

production. Newsprint and kraft paper took a large share of imports.

Per capita consumption of paper and board has reached 109 lbs., surpassing the pre-war level of 105 lbs. for the first time. Nevertheless, it is still below that of Scandinavia and West European countries such as Great Britain, Netherlands, Belgium and Switzerland.

It may therefore be expected that paper and board demand has not yet arrived at a peak, but will continue to rise. This seems to be borne out by developments in the first months of 1955. Consideration must also be given to the fact that paper production still lags behind industrial output in general.

Outlook for 1955 is quite favorable, although pulpwood prices have advanced substantially, forcing the industry to increase prices in early 1955.

FRANCE

Records Again Fall in 1953; Mills Built to Use Local Wood

Population: 43,000,000; Per capita paper consumption: 84 lbs.

Paper mills: 250; Woodpulp mills: 30; Straw or vegetable fiber mills: 45

Production (short tons) 1954 1953

Paper	1,788,600	1,573,000
Chemical woodpulp	375,100	259,820
Mechanical woodpulp	368,500	325,820
Straw & other pulp	40,700	57,200
Paper imports	88,000	67,100
Paper exports	108,000	84,700
Woodpulp imports	501,600	415,800
Woodpulp exports	13,200	11,880

Principal paper grades made:

Newsprint	421,300	374,000
Kraft	440,000	366,000
Straw	125,180	104,000
Book and Writing	399,000	344,000
Paperboard	346,500	311,000
Cigaret and Tissue	96,000	74,000

Principal paper imports from: Sweden, Finland

Principal woodpulp imports from: Sweden, Finland

Principal paper exports to: Indo-China, Algeria, Morocco

Principal pulp exports to: England, Netherlands, Belgium

A "bon jour"—365 of them—was had by the French pulp and paper industry in 1954. Thus, the post-war recovery rhythm, interrupted in 1948 and again in 1952, continued its upswing from mid-1953 to hit new highs in many sectors of pulp and paper production, and French industry experts boldly predict that 1955 will record an all-time high.

Prior to World War II, France imported some two-thirds of her pulpwood from U.S.S.R. and latterly from Finland, Austria and Canada. But now, on the basis of developing French fiber resources to a greater degree, an industry-government study



They Make Fine Papers in West German Mill

ROBERT GLATZ (left), Technical Mgr., and HERBERT GLATZ (right), Superintendent, of J. Glatz Paper Mills, at Niedenfels, Palatinate, West Germany. They make cigaret paper, tissue and writing paper, purchasing woodpulp from North American mills. This picture by PULP & PAPER.

has projected an expansion program for the industry for the years ahead.

This study indicates that domestic fiber resources could potentially double unbleached or bleached kraft pulp production within the next five years. Under the plan, 100,000 tons of long fibered sulfite or mechanical pulps might be replaced with short fibered broadleaf or straw pulps for chemical or semi-chemical pulps. France, however, is the third biggest importer of pulp in the world—imported more than ever in 1954.

As reported in PULP & PAPER's Review last year, the industry has boldly undertaken an expansion program which should result in increased paper production without heavy imports of pulpwood or pulp.

But as the result of imports of over 500,000 tons of pulp—up 85,000—

French paper production soared to a new high of 1,786,000 short tons in 1954, 14% above 1953 and some 67,000 tons above previous record year, 1951, when 1,719,950 tons were made.

MILLS ARE EXPANDING—Some companies sharing responsibility for this record are:

Cellulose de Strasbourg, which raised its production to 60,500 tons of unbleached sulfite, partly using hardwoods. About 13-20,000 tons of this will be bleached.

A hardwood sulfite pulp mill was reported completed by Cellulose d'Alizay, using mostly beech. Surplus production over and above the 7,000 to 10,000 tons integrated with its paper mill is intended for rayon manufacture.

During 1955, the joint projects of "Progil" and "Les Tanin Rey" companies to attain a minimum capacity of 33,000 tons of bleached chestnut pulp were to be completed. "Les Tanin Rey" was also converting to bleached kraft pulp production at its Couze mill, to about 16,500 tons yearly.

Expansion plans for Societe Landaise des Celluloses for its mill at Tartas called for 30,800 tons production of prime bleached sulfite, of which 16,500 tons was designated for its paper mill.

Some market pulp was expected to come from the newly expanded Cellulose de Pin's Facture mill. Present capacity is now said to be 15,500 tons of unbleached and bleached kraft pulps.

Other pulp mill expansion plans included the new mill of Cellulose de

New Pulp Mill

One of the newest pulp mills in France is this mill of La Cellulose d'Alizay, which made its debut in 1955. Product is sulfite pulp from hardwoods.

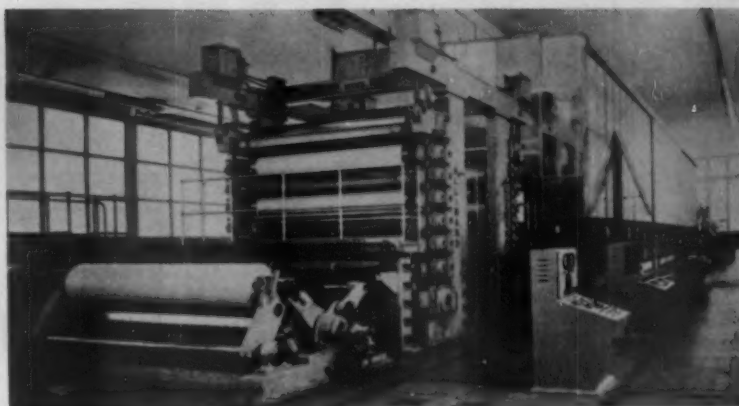


Rhone, for producing 22,000 tons of bleached esparto pulp and later 22,000 tons of kraft pulp from hard pine, and the Blendecques mill of Etablissements Avot-Vallee, raising its capacity to around 55 tons a day of semi-chemical straw and hardwood pulps, partly bleached.

PAPERBOARD MILLS IN BEST SHAPE—Paperboard industries were moving with the vigor which has characterized their operations generally since war's end. Paperboard manufacturers have developed and modernized many operations, and are in a much more favorable position than the rest of the paper industry.

Gerard Lourdelet, assistant general manager of S. A. Cartonneries Lourdelet-Maricot, says his company is now in the midst of a million dollar program of improvement and expansion. They are extending their cardboard drying machine by the addition of 10 dryers, installing a new pulper and various refining equipments as well as a new boiler. Alterations are also being made on their dry end and the head box.

The pulp industry in France is economically dependent on the fluctuations of the paper industry. Of some 80 pulp producers, only 10 are non-integrated. The industry however is not self-sufficient and an estimated one-third of its pulp is imported, principally from Scandinavia. Canada and U. S. are relatively small exporters to France.



One of New Paper Machines Adding to French Capacity

Sectional drive on this new Allimand 1953 paper machine in mill of Les Papeteries Ausselet at Cran-Gevrier near d'Annecy, has 14 electric motors providing continuous tension regulated from 50 to 500 volts. Electrical equipment built by the Societe "Le Materiel Electrique S.W." (Schneider Westinghouse). Paper machine produces printing papers at speeds up to 820 fpm, trimming 123 in.

French pulp production hit a new high in 1954, a total of 1,788,600 tons, almost double 1939. Both chemical and mechanical pulp production set records. Unbleached sulfate and sulfite hit new highs of 115,500 and 132,000 tons respectively. Bleached pulps soared to new heights, 81,400 tons (wood and vegetable fiber), while a record 150,700 tons were imported.

The French pulp and industry in 1954 got underway with the modernization program recommended by studies of national authorities in cooperation with industry officials. The first step to be achieved at the end of 1956 was to raise production capacities to 155,000 tons of unbleached kraft pulp, and about 275,000 tons of bleached pulp from long or short fibers.

THE OUTLOOK FOR MORE PULP By Jean Usse, La Cellulose du Pin

These increased yields are closely related to national forest possibilities, in accordance with improved forest engineering practices. Step two will take full advantage of expected increased forest yield, with intensified forest replantings of areas destroyed by fire from 1941 to 1949, and will run to 1960. Prospects, based on actual plantings, forecast an annual possible yield of 220,000 tons of unbleached kraft pulp. These consecutive increases of wood production and modernization are expected to result in lower production costs.

Increased use of bleached pulp is noted, rising percentage-wise from 12.26% in 1953 to 12.61% in 1954 from about 8.38% pre-war.

SOVIET RUSSIA

Conflicting Reports on Output; Accuses Papermakers of Loafing

Population: 197,000,000. Per capita paper consumption: 25 lbs.

Production	(in short tons)
Paper and paperboard	2,200,000 (1954)
Paper and paperboard	1,710,000 (1953)
Chemical woodpulp	1,157,000 (1952)
Chemical woodpulp	1,543,000 (1951)
Groundwood	1,047,000 (1952)
Groundwood	937,000 (1951)
Woodpulp exports	110,000 (1951)

Principal pulp imports from: Satellite nations and Scandinavia.

Potentially, the Union of Soviet Socialist Republics has the greatest reserve of traditional pulping fibers in the world. But tremendous investments will be necessary to bring them into fruition.

Russia's 8,524,750 sq. mi. comprise one-sixth of the earth's land surface. Her vast far-flung forests of 2,867,188 sq. mi., the largest forests in the world, also include the world's largest coniferous forest. Conifers make up 66% of Russia's forests. Although immense, only 19.4% of total land area, or 1,640,925 sq. mi. are accessible forests.

Heavy deforestation of the more accessible forests took place during World War II. Considerable investments are required to bring the more remote and mature stands into use.

Russia's woodpulp production in 1952 was estimated as 1,047,000 tons of mechanical pulp and 1,157,000 tons of chemical pulp by the United States Pulp Producers Assn. This was down from 1951 by 300,000 tons, and actually chemical pulp was down 400,000 tons, but Russia has many chemical pulp mills to draw upon in satellite nations.

FRANCE—PAPER 1954 vs 1953

(in thousands of short tons)

	1954	1953	Increase except as noted
Straw paper	125	104	20.1%
Kraft paper, other coarse	400	367	8.9%
Writing, printing	822	720	14.1%
Strawboard	9	32	-72 %
Other board	338	280	20.7%
Thin papers, specialties	97	74	31.0%
	1,791	1,577	

FRANCE: 150 Years of Paper

Annual Production of Paper and Board (in thousands of short tons)

Year	Tons
1800	22,000
1850	55,000
1900	450,000
1914	900,000
1938	1,289,000
1949	1,260,170
1950	1,450,270
1951	1,719,950
1952	1,358,500
1953	1,576,000
1954	1,792,000

FRANCE: WOOD PULP

(in thousands of short tons)

	Chemical Produced	Chemical Consumed	Mechanical Produced	Mechanical Consumed
1938	148		230	
1949	243	331	291	371
1950	261	606	320	420
1951	305	691	349	497
1952	226	510	308	396
1953	280	590	326	408
1954	335	664	369	471

Pulpwood production, estimated in 1950 at 7,500,000 cu. meters, is said to be around 10,500,000 cu. meters at present. Some 300,000 cu. meters of pulpwood are imported from Finland yearly. An estimated 28,000 tons of woodpulp and 54,000 tons of paper and board also came from Finland in 1953 in comparison to 12,000 tons of woodpulp and 30,000 tons of paper and board in 1952. Scandinavia shipped 28,165 tons to Russia in 1954.

REPORTS ON PAPER OUTPUT—

One report estimated Soviet paper production at 1,100,000 tons of paper and board in 1937 of which 200,000 tons were newsprint. Another set it at 831,000 in that year. Production rose to 1,700,000 tons, including 360,000 tons of newsprint in 1950, says one report, although another report placed it at 1,194,000 in that year. If goals of the current Five Year Plan are realized, 1955 production should rise to 2,500,000 tons. Average newsprint production is probably 400,000 tons. An American Paper & Pulp Assn. report estimated 1954 production at 2,530,000 tons.

According to a U.N. survey, estimated consumption in 1960 and 1962 of some 3,300,000 tons of paper and board, including 770,000 tons of newsprint, may prove to be on the low side. It says that shifts now taking place in the Soviet economy, not only in the direction of increasing flow of consumer goods, but also in increasing consumer satisfaction (higher packaging standards, for instance) could imply an even more rapid rise in consumption. It stresses that Soviet Russia has a long way to go before it reaches even Western European standards of consumption.

PAPERMAKERS ACCUSED OF LOAFING—This may well be an understatement, for the industry is evidently having its troubles meeting domestic demand. From the "Current Digest of the Soviet Press," a recent translation concerned the ex-coriation by Soviet writers of paper mill workers and engineers. Professing not to be specialists in the field of papermaking, the writers told the

U.S.S.R. Paper and Board Production

Year	In short tons
1937	831,000
1940	812,000
1946	556,000
1947	696,000
1948	836,000
1949	995,000
1950	1,194,000
1952	1,540,000
1953	1,710,000
1954	2,200,000

Sources: United Nations; U.S.S.R. Information Bulletin; and others.

Russian Newsprint for Sale

Soviet Russian newsprint is readily available in India, as indicated by this reproduction of an advertisement on the cover page of PAPER MARKETING NEWS, monthly magazine published in Bombay. This issue, the 8th since establishment in late 1954, had 32 pages.



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paper industry that they were plainly falling down on the job. Here are highlights from the letter to workers of the paper industry:

"We think every worker in the paper industry remembers that paper output in 1955 is to be 46% higher than in 1950. Papermakers seem to be working toward this goal, sometimes even over-fulfilling the plan. A closer look into various mills, however, and this happy state of affairs proves to be an illusion.

"Judge for yourselves! The plan for packing and wrapping paper for the first six months of 1954 was met 117%. Good? Yes! But what about paper on which books are printed? Here the picture is much worse! The plan for printing grades of paper was met only 98%, for offset paper 95%, for lithographic paper 74% and paper for bookbinding 91%.

"Are not the workers at the Okulovka Combine, whom 20 years ago the Writers' Congress held up as an example to others, embarrassed by the fact that this cannot be done today? Only one of six machines at the mill is now manufacturing printing paper; the remainder are turning out wall-paper and other grades.

"It is well known that because of poor organization of production such enterprises as the Neman combine and the Kamenogorsk and Nizhnedne-

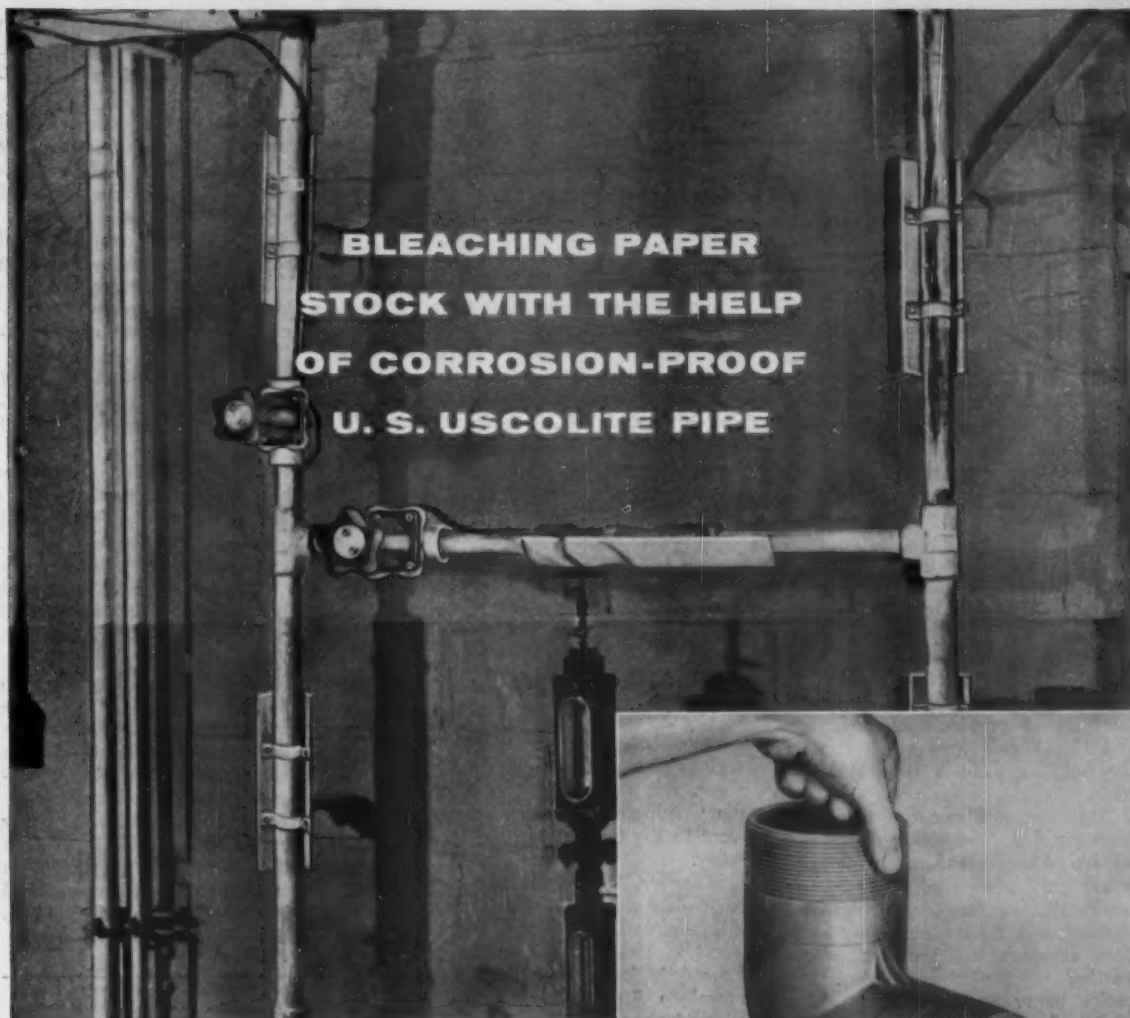
provsk Mills run at only 70% to 85% of capacity. It is said that not only papermakers are to blame, but also power men, wood producers and chemists. This is true. The suppliers of raw materials are behind in their debt to the papermakers. Woods workers are supplying them poorly with pulpwood and chemists and power men are negligent with regard to paper production. They must pay off their debt.

"It must not be forgotten that even according to the plan printing paper comprises 1/10 of the entire paper industry production and that under these conditions the loss of each per cent of the plan is strongly felt."

NEW MILLS IN NORTH RUSSIA—

Evidently, Soviet paper mills are more intent on producing heavier base stocks than they are in fine papers. That the industry, as a whole, is progressing, is to be seen in other reports. Production of pulp and paper is said to have increased some 30% between 1951 and 1954 according to one report, which also adds that the Russian pulp and paper industry is in a period of terrific expansion. New pulp and paper mills are reportedly recently built in northern Russia as well as in other areas.

Russia does have surplus or exportable newsprint as is evident from



Milk of lime rotameter, used in the control of the pH of the stock in a double-shaft mixer. The piping is U. S. Uscolite with Uscolite (Hills-McCanna) valves.

The paper mill, located in Pennsylvania, selected U. S. Uscolite® plastic pipe because it's immune to the corrosive chemicals used in the bleaching process, and requires *no upkeep*. The piping previously used just couldn't stand the gaff.

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EUROPE

reports that Russian newsprint has been advertised for sale in India and also a recently completed trade pact with Uruguay calls for newsprint to be imported by the latter.

ANOTHER REPORT ON SOVIETS

—Here is what Der Zellstoffabrik Waldhof of West Germany has to say about Soviet Russia's industry:

"The Soviet's paper and board industry was set back tremendously because of the destruction of a large number of mills in the Western area. This setback was just about balanced by equipment and mills in the areas of East Finland, Baltic States, East Prussia and East Poland.

"Meanwhile, mills have been rebuilt and modernized. Dismantled machines from middle and eastern Germany were limited in their use in Russian mills. New mills have been built in the provinces of Archangel and Gorki and Northern Ural with the help of Finnish reparation exports.

"Information about the type and capacity of Russian production is not reliable. Altogether, Soviet paper and board production is double pre-war production. Imports, except those of Finland and East Germany reparations, decreased and are negligible in relation to Soviet production. Per capita paper consumption is about 17.6 lbs."

EAST GERMANY

Where Did Most of Pre-War Mill Capacities Disappear To?

Population: 17,313,000. Per capita paper consumption: 45 lbs.

Production	(in short tons)
Paper and paperboard	660,000 (1954)
Chemical woodpulp	331,000 (1952)
Groundwood	342,000 (1952)

Principal paper exports to: Russia, Bulgaria.

East Germany has a population of around 17,313,700 in its 42,112 sq. mi. Second to Soviet Russia, it has the most important paper and board production capacity within the Communist bloc, and presumably is a major supplier of Soviet needs.

Total paper and board production, guesstimated on the Five Year Plan, was about 660,000 short tons in 1954. Paper and board production in 1952 was 631,400 tons of which newsprint

totaled 90,200 tons, printing and writing, 156,200 tons and other papers, 169,400 tons. Board production was estimated at 215,600 tons.

Total paper and board production is scheduled to rise to 814,000 tons in 1955.

East Germany imports timber from Albania and Rumania and exports paper to Bulgaria and of course, to Russia. Forests cover 10,623 sq. mi. Conifers are estimated at 80%.

Recent reports from East Germany said that potato stalks had proved a suitable raw material for cardboard pulp. A method, requiring special machinery, has been found for pulping one metric ton of potato stalks yielding $\frac{1}{2}$ ton of pulp, which is similar to bleachedwood pulp and can be used for production of newsprint, according to the report.

Giving a clue to what Russia seized in East Germany, there is a difference of nearly 1,100,000 cords production between the total pulpwood that all Hitler Germany produced in 1939 and what the separate Western German zones were able to produce alone in 1949, ten years later. In this period, and by the same separation, paper production of Germany was about halved, with West Germany getting the lesser share. But more than two-thirds of the woodpulp production apparently went to the Soviet side in East Germany.

However, East Germany was able to produce only 331,000 tons of chemical pulps and 342,000 tons of groundwood in 1952 (U.S. Pulp Producers figures), indicating war damage or removal to Russia of equipment had sliced its production to one-third of the pre-war potential for that part of Germany—not allowing for any gains in the 7 years of peace. Strangely, it imported 9,000 tons in 1952, whereas it had exported 17,000 tons in 1951.

Scandinavia's 372,000 tons of pulp shipments to Germany last year includes a portion that went to East Germany.

CZECHOSLOVAKIA

Big Producer Among Satellites

It Is One of "Have" Nations

Population: 13,000,000. Per capita paper consumption: 40 lbs.

Production	(in short tons)
Paper and paperboard	467,000 (1953)
Chemical woodpulp	314,000 (1951)
Groundwood	94,000 (1951)

Principal exports to: Soviet Russia.

Papermaking in Czechoslovakia is among the most important industries and it is a major pulp producer and has been an important exporter. Abun-

dant wood supplies in Slovakia and sufficient national coal production provide a background for a stable industry.

A large number of mostly small mills produce a wide variety of paper grades. Paperboard and allied products comprise about one-fourth of total paper production.

Present capacity is an estimated 500,000 short tons, an increase of more than 100,000 tons capacity for pre-war Czechoslovakia. Present capacity has been attained through modernization.

Forests cover 15,380 sq. mi. of Czechoslovakia's 49,381 sq. mi. Conifers comprise an estimated 65% of all forests.

According to U.S. Pulp Producers Assn., Czechoslovakia made 314,000 short tons of chemical woodpulp and 94,000 tons of groundwood in 1951, the last year in which it received such records. In some years since World War II, Czechoslovakia has shipped high quality woodpulp to U.S.A. and other Free World countries. It exported 33,000 tons of chemical pulp in 1951. It surprisingly actually imported 1,000 tons of chemical pulp in 1952, but apparently none at all in the last two years. It is a "have" nation, normally needs no imports.

It made 360,000 short tons of paper and paperboard in 1937. In 1949 it made 400,000 tons. Its production in 1953 was estimated to have reached 467,000 tons, of which 352,000 was paper and 115,000 paperboard.

POLAND

Under Six Year Plan Aims

To Nearly Double Production

Population: 26,000,000. Per capita paper consumption: 35 lbs.

Production	(Short tons)
Paper and paperboard (1953)	389,400
Woodpulp (1952)	165,000
Imports of pulp (1952)	42,000

Principal exports to: Russia.
Principal imports from: Scandinavia.

Continued strides in Poland's paper industry have lifted paper production from 214,500 short tons in 1937 to 389,400 short tons in 1953. The industry has but a few short months to go to attain the goal of the Six Year Plan, which is an estimated 599,000 tons. In the same plan board production is scheduled to rise from 55,000 tons to 95,000 tons.

That Poland has paper and timber to spare is evident from reports that paper and timber exports go to Albania, paper to Red China and Hungary. Timber imports come from

Rumania and Czechoslovakia as well as woodpulp from the latter.

Poland's largest and newest newsprint mill, which began operation in 1954, is presumed to have added another newsprint machine 216 in. wide from East Germany. Additional paper making equipment, also from East Germany, will permit upgrading of paper production. Experiments are also being conducted on straw as a suitable pulp for this mill.

Poland's mills specialize in kraft board and bags and the industry's kraft is said to have exceptional strength. Wide use is for wrapping and envelopes, bags and paper string. The variety of kraft grades make it possible for use in fancy wrappings as well as industrial products.

The forests of Poland are about 88% conifers of the total forested area of 28,969 sq. mi., almost all accessible. Total land area is 120,347 sq. mi., about the size of the state of New Mexico, with a population nearly 36 times as great. Fir, spruce and straw pulp form the principal raw material furnish for Poland's paper mills.

An interesting and subjective report on the Polish pulp and paper industry comes from Der Zellstoffabrik Waldhof, of West Germany: Poland lost some 660,000 short tons of paper and paperboard capacity, which it had acquired from Germany before World War II, and which was either destroyed in World War II or dismantled and taken to Soviet Russia.

Several mills have been rebuilt, and now total Polish production is considerably above pre-war. Expansion programs in the mills taken over from East Germany now total 66% of Polish capacity. Paper exports and imports were unimportant before the war, but now considerable exports go to U.S.S.R., and kraft paper and board are also exported to Western Europe, South America and Asia.

A pulp mill is under construction in Kustrin, and the largest project of its kind is a pulp and newsprint mill using pine at Ostrolenka near Warsaw.

RUMANIA

Scant Info on This Satellite

Population: 17,000,000. Per capita paper consumption: 7 lbs.

Production	(short tons)
Paper	132,000 (1954)
Woodpulp	127,000 (1952)

Rumania's Five Year Plan is reported to have increased paper production from 66,000 tons in pre-war times to 132,000 tons in 1954.

Its woodpulp production was 127,000 tons in 1952, of which 76,000

was chemical and 51,000 groundwood.

Considerable increase in production of kraft paper and bags and specialty papers are said to have been made.

About one-fourth of Rumania's 91,584 sq. mi. are forested, an estimated 24,415 sq. mi. of which conifers comprise 25%.

BULGARIA

Is Adding to Its Capacities

Population: 7,250,000. Per capita paper consumption: 45 lbs.

Production	(short tons)
Paper	30,000
Woodpulp	6,000

New capacities were being added in Bulgaria, another Soviet satellite nation, in the past year or two and probably paper production is up to 30,000 tons a year at least.

Bulgaria made only 6,000 tons of woodpulp in 1952, as it did in 1951, all of it groundwood. It imported 33,000 tons of chemical pulp in 1951 and 6,000 tons of groundwood, and there have been no records available since.

The pulpmill, which is reported to have started production in 1953 in Sofia, is expected to add a paper mill for integrated operations. Another integrated pulp and paper mill is under construction.

Bulgaria's 42,796 sq. mi. with a population of 7,300,000 has a forest of 14,286 sq. mi. Conifers comprise an estimated 13%.

HUNGARY

Soviet "Shots-in-Arm" Are Boosting Paper Production

Population: 10,000,000. Per capita paper consumption: 15 lbs.

Production	(in short tons)
Paper and paperboard	83,100 (1954)
Groundwood pulp	8,000 (1952)
Imports—woodpulp	8,000 (1952)

Modern Soviet papermaking equipment is reported to have accelerated expansion of Hungary's paper industry from an expected goal of 56% increased production to 116%. The revised Five Year Plan is expected to bring forth 110,000 short tons as annual output when 1955 rolls to an end.

Hungary's annual paper production has averaged 55,000 tons since 1949, but the shot-in-the-arm additions of equipment rehabilitation and aforementioned Soviet imports, were expected to bring production in 1954 to around 83,100 tons.

No definite word has been heard on the new mills including one pulp mill to operate on waste products. Princi-

pal paper products are cigaret and other specialties.

Upswing of Hungary's paper industry is credited by Soviet writers to the industry's nationalization. All paper mills are state property. The industry is said to be self-sufficient in its paper requirements.

Hungary's area of 35,902 sq. mi. is covered with about 4,838 sq. mi. of forests of which 308 sq. mi. are conifers.

According to latest U.S. Pulp Producers' reports there is no chemical pulp produced in Hungary, but it made 8,000 short tons of groundwood in 1952. In the same year it imported 7,000 tons of chemical pulp and 1,000 of groundwood. In 1951 it had imported 11,000 tons of chemical pulp.

PORTUGAL

Big Jump in Pulp Output; Exports About Half of It

Population: 8,500,000; Per capita paper consumption: 16.8 lbs.

Paper mills: 18; Woodpulp mills: 2

Production (short tons)	1954	1953
Paper	48,700	41,361
Chemical woodpulp	45,000	7,745
Paper imports	18,100	29,417
Paper exports	3,300	—
Woodpulp imports	18,000	22,121
Woodpulp exports	23,800	4,929

Principal paper grades made:

Newsprint	2,100
Kraft	5,800
Book and Writing	11,500
Paperboard	7,400
Others	9,000
Cigarette and Fine	600
Wrapping other than kraft	12,300

Principal paper imports from: Sweden, Austria

Principal woodpulp imports from: Sweden, Finland

Principal woodpulp exports to: England, France, Belgium

Principal paper exports to: England, Germany, Norway, Greece, India

Pulp production soared to a record high in Portugal as one new mill swung into full production and another doubled its far-famed eucalyptus sulfite pulp production.

This sudden but long expected upswing which brings Portugal's pulp capacity from 7,000 tons to 50,000 tons will mean a sharp drop in pulp imports, which have averaged 78% of pulp requirements, and will also mean greatly increased pulp exports, which jumped from 4,929 tons in 1953 to 23,800 tons in 1954. It will not mean any sudden per capita consumption rise, as Portugal will probably continue to export about 50% of her pulp production.

A special report on Portugal's pulp



EUROPE

and paper industry comes from Eduardo Rodrigues de Carvalho, Portuguese industrialist and head of the Portuguese Cellulose Co. (Companhia Portuguesa de Celulose), whose new integrated pulp and paper mill started up in 1953. In 1954 this company increased its capital to \$4,150,000.

Full production was achieved by this company in 1954 when it rolled

out 33,600 tons of kraft pulp. Some 4,900 tons were processed in the paper mill and a small portion was bleached. Bleached pulps and papers reached regular production in 1955. This mill is at Cacia, 170 miles from Lisbon. The kraft mill includes Swenson evaporators and a Sandy Hill-Kamyr bleach plant.

PULP EXPORTER DOUBLES OUTPUT—The Caima Pulp Co., at Quinta do Caima, Albergaria-a-Nova, doubled its production of unbleached eucalyptus sulfite pulp to 13,500 tons. This unique specialty, quality sulfite mill sells its easy-bleaching unbleached eucalyptus pulp all over the world.

PORTUGAL—Production

(In Short Tons)

	Chem. Woodpulp Production	Paper Production
1951	7,400	44,230
1952	7,400	35,000
1953	7,745	41,361
1954	45,000	48,700

This pulp is in demand for blotting and other papers, where extra opacity and brightness are required. New equipment in this mill is said to include a new wet end on the pulp machine, new steam and oil burning boilers and a complete new power house.

Portugal's chemical pulp capacity of 50,000 tons includes 13,500 tons of unbleached eucalyptus pulp and 36,500 tons of unbleached kraft. Production in 1954 of 45,000 tons includes 9,200 tons for domestic consumption. No mechanical pulp is made in Portugal.

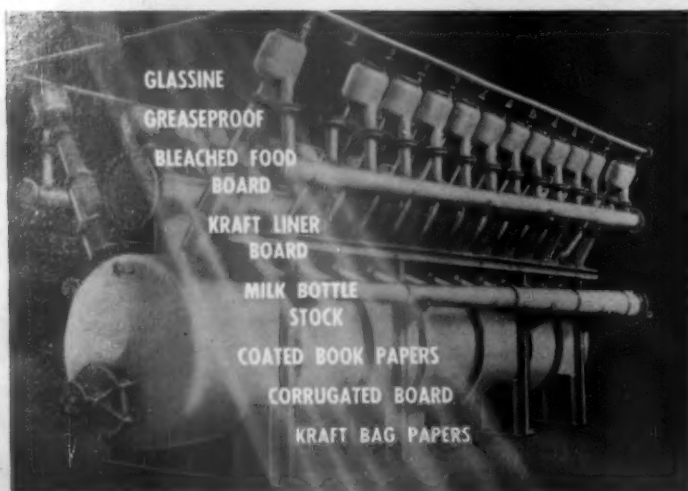
Regardless of grades



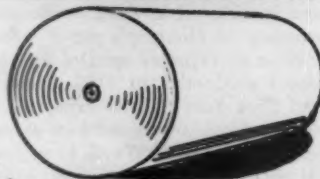
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NORWAY

Country Breaks 18-Year Pulp Record but It Exports Less

Population: 3,500,000; Per capita paper consumption: 140 lbs.

Paper and board mills: 51

Pulp mills: 29

Production (short tons)	1954	1953
Paper	625,900	555,500
Chemical woodpulp ..	649,000	598,400
Mechanical woodpulp	708,400	583,000
Paper imports	none	none
Paper exports	391,600	339,348
Chemical woodpulp exports	317,000	301,100
Mechanical woodpulp exports	423,500	338,800

Principal pulp and paper exports to: U. K., Belgium, France, Netherlands, U. S. A.

Records were broken and nearly broken in Norway's pulp and paper industry in 1954. For the first time, paper and board exports surpassed the best pre-war years.

Pulp exports climbed for the third straight year, limited only by heavy domestic demands.

No new mills were built in 1954; instead the industry accomplished its production records by modernization of existing equipment and addition of 7 new paper machines.

Pulp and paper is a big industry in Norway; it accounts for more than 25% of all exports.

Norway's largest wood processing company, A/S Borregaard, reported record pulp production. It also makes rayon staple from woodpulp and this production was 15% greater. Chemical pulp production was higher than any previous year. The main plant at Sarpsborg turned out a record 121,734

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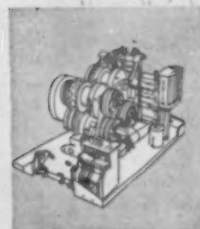
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● Speed-o-Matic, the true power hydraulic control, provides fast, easy, smooth response . . . ideal control for speed with accuracy. It's also engineered to *reduce operator fatigue*—enables him to maintain greater output with less effort.

Extra power, stamina



● Anti-friction bearings, splined shafts and precision-machined surfaces at every important point convert more *rated* hp into actual line pull. All-welded, stress-relieved construction permits use of extra power.

More work-time



● Speed-o-Matic reduces operator fatigue, losses due to end-of-the-shift let-down. Further, it minimizes downtime. For example, Speed-o-Matic clutch is hydraulic actuated, self-compensating. Eliminates frequent stops for adjustment.

A demonstration can be arranged to suit your convenience. See one of these great machines in action and judge for yourself why they are today's most advanced shovel-cranes.

LINK-BELT SPEEDER

*Builders of a complete line of crawler
and rubber-tired shovel-cranes*



Look Like Matchsticks From on High

Solitary tug tows seven booms of long logs on Glorinna River, Norway's largest river.

tons of bleached pulp, 30,543 tons of paper, 15,669 tons of rayon staple and 1,400 tons of rayon yarn.

This report is special to PULP & PAPER:

THE INDUSTRY IN NORWAY

By Oyvind Nossen

Forest Industries' Economic Institute, Oslo, Norway

Norway's forests, rivers and water power provide her with conditions favorable for a pulp and paper industry. The forests comprise 18,500,000 acres, 23.5% of the total area of Norway.

Today the industry's exports represent more than 25% of all exported goods from Norway and it also supplies the country with its total domestic needs of paper and board. Norway has one of the highest European per capita paper consumption rates, 140 lbs.

At the turn of the century, mechanical woodpulp production was about 220,000 short tons; today it is 708,400 tons. Then, chemical woodpulp production was 110,000 tons, today it is 649,000 tons. Paper and board production rose from 66,000

tons to 625,900 tons.

This development, however, has not been steady. The industry depends heavily on exports, and international market fluctuations affect it forcibly. Between the two wars there were hard times and the late war set its mark on the industry, mostly because of the isolation of Norway.

Since then, enormous strides have been made despite import restrictions immediately following the war. Most woodpulp, paper and board mills have modernized, and although no new mills have been built, 7 new paper machines have been installed. Production has increased 20% over pre-war level.

In Norway today, we have some 45 mechanical woodpulp mills, 16 sulfite mills, 6 sulfate mills and 51 mills producing paper and board. Some 85 of these are integrated, producing mechanical and chemical pulp and paper. Sixty-seven are in the east part of the country, nine in the south, seven in the district around Trondheimsfjord and two in the west.

The industry furnishes direct em-

NORWAY—Paper Produced

(in thousands of short tons)

	Paper	Board	Total
1937	457	44	501
1950	485	45	530
1951	514	49	564
1952	466	49	515
1953	—	—	555
1954	581	44	625

NORWAY—Paper Exports

(in thousands of short tons)

Wrapping News Other Board Total

	Wrapping	News	Other	Board	Total
1937	100	195	62	25	382
1949	63	165	80	17	325
1950	82	164	85	30	361
1951	82	152	101	31	366
1952	65	131	64	27	287
1953	63	145	104	26	338
1954	46	149	152	44	391

ployment for some 20,000 workers and staff, and indirectly for a similar number of forest workers, etc. The industry is one of the largest consumers of electrical energy; annual consumption being over 1.5 billion kwh. It is one of the most important customers of the railway and shipping.

On the whole, 1954 was a good year. Production surpassed the best pre-war years and for certain grades, it was considerably better.

Mechanical woodpulp had a record production of 708,400 short tons, 16% better than the former record year, 1951, and 24% over 1953. Mechanical woodpulp exports also showed a large increase, reaching 423,500 tons compared with 338,800 tons in 1953. This is a record, being 15% higher than 1951. These went chiefly to the traditional European markets. The United Kingdom, France, Netherlands, Denmark and West Germany combined took 95%. The United Kingdom however, was the outstanding importer, taking 73%; France ranked second with 10%.

PULP BREAKS 18-YEAR RECORD—

NORWAY—Pulp Produced

(in thousands of short tons)

	Mech.	Sulfite	Sulfate	Total
1937	599	527	82	609
1946	308	207	46	253
1950	590	449	84	533
1951	613	491	93	584
1952	569	454	92	546
1953	637	481	92	573
1954	708	554	95	649

NORWAY—Pulp Exports

(in thousands of short tons)

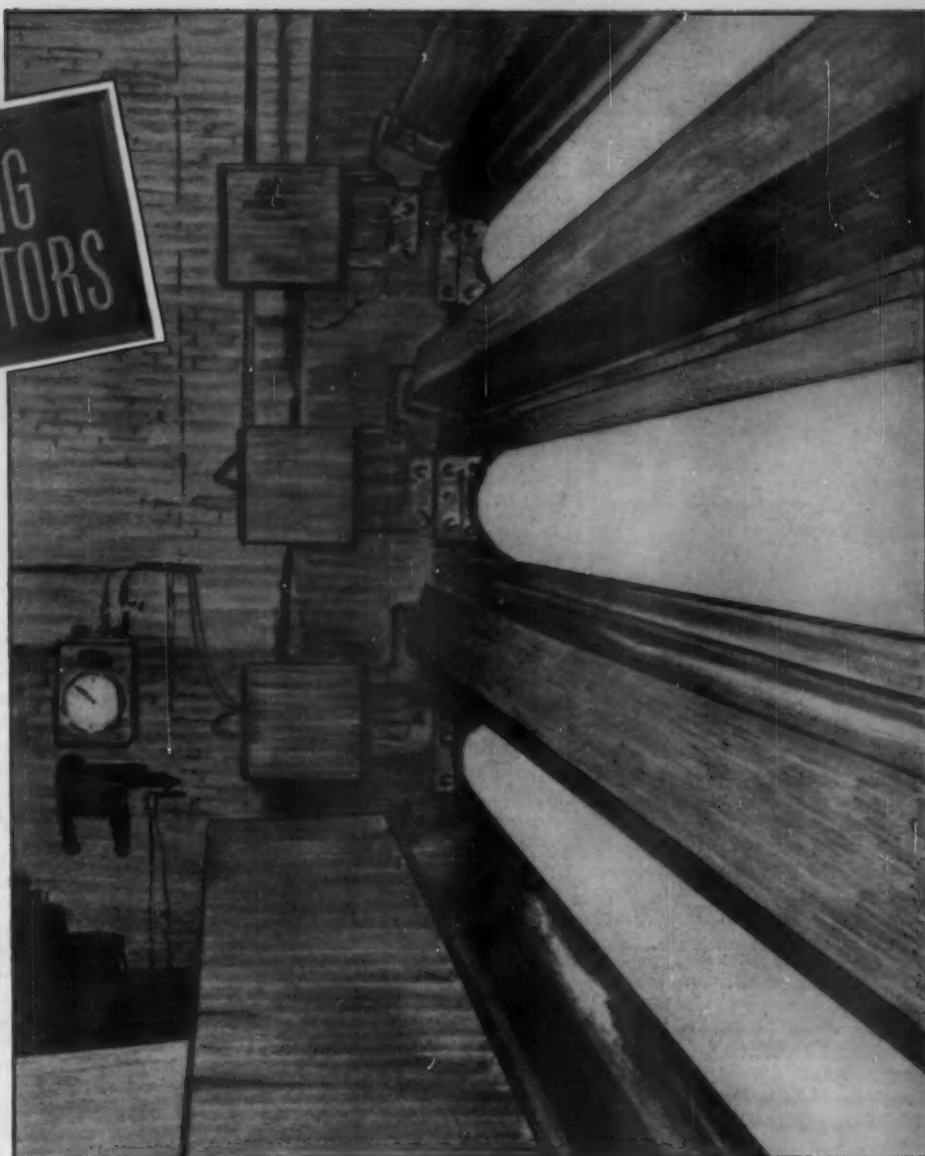
	Mech.	Sulfite	Sulfate	Total
1937	322	298	56	370
1946	91	86	2.2	94
1949	289	202	0	211
1950	344	236	6	258
1951	369	238	0	253
1952	357	270	0	236
1953	359	184	6.8	477
1954	423	176	13	316



On Farrisvandet—Norway's Lake Farris

Norway's rivers and lakes comprise 5,000 sq. mi., and her forests an estimated 29,455 sq. mi. Here, where the timber comes down to meet the shore on Lake Farris, near Larvik, logs are being floated to a pulp mill.

LODDING
DOCTORS



*Lodding Doctors are taking a vital part in the great
expansion of American newsprint production . . .*

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS



EUROPE

Chemical woodpulp also enjoyed a record 1954 with 649,000 short tons vs. 598,400 tons in 1953. This was 7% higher than the record year, 1937. This increase was all sulfite, sulfate production being at the 1953 level, due primarily to a 5-month strike at one of the sulfate mills.

Despite this high production, exports declined from 331,100 tons in 1953 to 251,020 in 1954, as compared with 390,500 in 1937. This drop is caused by increased domestic demands, including more conversion of dissolving pulps to artificial silk and staple fibers.

Paper and board production set a record 1954 of 625,900 tons compared with 555,500 tons in 1953 and 511,500 tons in 1937.

Exports for the first time surpassed best pre-war years, 391,600 short tons compared with 385,000 tons in 1937.

In the last pre-war years consumption was scarcely 110,000 tons, rising to 209,000 tons in 1953 and to 233,200 tons in 1954. Exports of paper and board reach all corners of the earth. Britain took 19% of all Norwegian paper and board exports, Denmark and Australia, 7% each, The Netherlands, 6%, Belgium, West Germany, Brazil and India, 5% each.

Export value of pulp and paper products represented over one billion crowns (approximately \$14,000,000) in 1954, of which mechanical woodpulp totaled \$2,660,000, chemical woodpulp, about \$3,380,000; paper and board, \$6,370,000, and staple fibers well over \$700,000.

SWEDEN'S WOODPULP EXPORTS TO ALL COUNTRIES AS COMPARED WITH EXPORTS TO THE UNITED STATES

(In Short Tons)

Years	Bleached Sulfite	Unbleached Sulfite	Bleached Sulfate	Unbleached Sulfate	Groundwood	Dissolving*
1938 (To All Countries)	304,078	571,077	92,793	575,508	297,420	
1944 (To All Countries)	156,340	710,709	13,088	70,889	10,600	
1945 (To All Countries)	262,146	49,787	41,273	536,114	314,054	
1945 (To U. S.)	56,496	283,959	28,070	274,429	27,933	
1947 (To All Countries)	445,607	530,569	136,701	462,120	223,852	
1947 (To U. S.)	40,076	218,918	56,282	201,440	12,532	
1949 (To All Countries)	578,965	530,448	197,380	496,287	284,350	
1949 (To U. S.)	42,130	129,902	70,013	106,160	7,547	
1950 (To All Countries)	632,082	609,404	250,326	501,324	312,224	
1950 (To U. S.)	49,350	99,562	89,663	103,932	12,763	
1951 (To All Countries)	601,114	526,089	267,647	455,863	326,661	
1951 (To U. S.)	50,522	51,344	71,765	58,562	6,767	
1952 (To All Countries)	490,747	406,386	248,861	352,272	296,231	
1952 (To U. S.)	26,776	61,356	72,714	41,855	12,634	
1953 (To All Countries)	385,133*	584,020	355,787	521,267	341,105	409,782
1953 (To U. S.)	45,262	79,408	106,635	63,091	14,744	3,773
1954 (To All Countries)	273,680	574,310	337,370	465,630	396,000	407,440
1954 (To U. S.)	22,330	44,110	88,530	49,170	13,403	1,320

* Main part of dissolving is bleached sulfite.
Source: Svenska Cellulosefabriken, Stockholm.



Continuous Cooking—Kamyir Does It

Continuous cooking of standard chemical pulps, particularly sulfate, has long been a dream of pulpmakers around the world. Aktiebolaget Kamyir, Karlstad, Sweden, a joint enterprise of Swedish, Norwegian and Finnish equipment and machinery firms, has made it a reality in several European countries. Now the Kamyir process will be introduced in North American mills in Alberta and in Southern U.S.A. Here are four Kamyir officials and associates, reading PULP & PAPER's exclusive report of plans for pioneering the process in St. Regis's subsidiary 400-ton mill in Hinton, Alberta, next year (l to r): TORE AHLEN, Vancouver, Canada; JOHAN RICHTER, Norwegian-born Kamyir Chief Engineer, of Karlstad, Sweden; KNUT DAHL, President of Kamyir's American company, Hudson Falls, N.Y., and LENNART LUNDBERG, Seattle, Wash., U.S.A., who went to Sweden in 1953-4, learning the process and doing other work.

SWEDEN

Many Records Tumble, but 1937 Pulp Export Mark Still Stands

Population: 7,200,000; Per capita paper consumption: 200 lbs.

Paper mills: 52. Woodpulp mills: 134.

Production (short tons) 1954 1593

Paper 1,536,000 1,352,000

Chemical woodpulp 3,121,000 2,777,000

Mechanical woodpulp 850,000 612,000

Paper exports 868,000 784,000

Woodpulp exports 2,453,000 2,379,300

Principal paper grades made: Newsprint, kraft, paperboard.

Principal paper exports to: U.S., Germany (East and West), Belgium, Netherlands, Denmark.

Principal woodpulp exports to: Britain, France, West Germany, U.S.A., Italy, Netherlands, Belgium, Brazil, Spain.

Sweden's pulp and paper industry broke nearly all existing production and export records in 1954. This, in spite of increased production costs due to higher wage agreements and the growing role of North American pulp in Europe.

Increasing North American pulp exports only helped to meet an almost insatiable European demand. This new competition had a decided price-restraining effect on Swedish pulp.

Sweden's domestic consumption of pulp, paper and board is expected to take a larger share of available market production. One sulfite pulp mill will divert its entire market pulp production some time in 1958 to newsprint production. This is the Ortviken mill of the Swedish Cellulose Co., which plans an \$11,000,000 newsprint mill with initial production of 77,000 short tons when it starts up in 1958. Step two will up production to around 154,000 tons.

PULP RECORDS BROKEN—Total chemical woodpulp production in 1954 soared to 3,120,700 short tons, a new record exceeding 1937's 3,063,500 tons and 13% above 1953's 2,777,000 tons. Chemical market pulp nosed out 1953 production by 275,000 tons to reach 2,310,000 tons.

Sulfite pulp production of 1,705,000 tons was nearly 200,000 above the 1,518,000 tons in 1953. Sulfite market pulp totaled 1,375,000 tons, of which 770,000 was bleached and 605,000 was unbleached. Total 1953 sulfite market pulp was 1,232,000 tons, of which 687,500 was bleached and 550,500 unbleached.



Lukens Steel Corp., Coatsville, Pa., makes Lukens Inconel-Clad Steel to combat digester corrosion. Inconel is clad to a steel backing by rolling under great pressure and at high heat.



Chicago Bridge & Iron Co., Chicago 4, fuses corrosion-resisting Inconel to a steel backing to make HORTONCLAD steel. The bi-metallic plate thus formed is integrally and continuously bonded by a special high vacuum process.



A. O. Smith Corp., Milwaukee 1, Wisc., uses its exclusive SMITHLINING, a closely controlled resistance welding process, to inseparably bond the Inconel lining to a carbon steel backing to provide corrosion resistance and strength.

All 3 Methods offer economical ways to get Inconel Protection for sulfate digesters

Sulfate pulping liquors in the modern mill often show little respect for mild steel digesters.

One big mill, for example, had eight steel digesters. The average corrosion rate figured out at 62 mils per year.

That was much too high. So they started looking for a more satisfactory material. Their final selection? Inconel® — because of its resistance to both corrosion and stress corrosion cracking.

To save unnecessary expense, the new digester was made of Lukens Inconel-Clad Steel. (Inconel cladding is 10 to 20% the thickness of the steel plate to which it is bonded. There is a worthwhile saving in cost, yet no sacrifice in strength or corrosion resistance.)

After 4 years of use, this Inconel-Clad digester shows no measurable

corrosion. It's still too early, of course, to hazard a guess on how long the digester will eventually last. But so far everyone is well satisfied with its performance.

This is not an isolated case. A recent study by the Tappi Digester Corrosion Subcommittee in 12 mills substantiates the findings of the continuing corrosion tests made by several mills in co-operation with our Corrosion Engineering Section for over 10 years.

Shown here are three methods of securing Inconel protection against alkaline pulping liquors—SMITHLINING, HORTONCLADDING, and LUKENS-CLAD.

Although they are fabricated by different techniques, they offer the same long-lasting protection of Inconel. All three have been tried and proven in use. If you are troubled by accelerated digester corrosion, at least one of these methods of getting "Inconel protection" will be an answer.

Expert help with the planning of a new alkaline digester is available. Write to the companies mentioned in this advertisement, or to Inco's Corrosion Engineering Section. We'll be glad to give you all the help we can.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.



Nickel Alloys

Inconel... for longer life

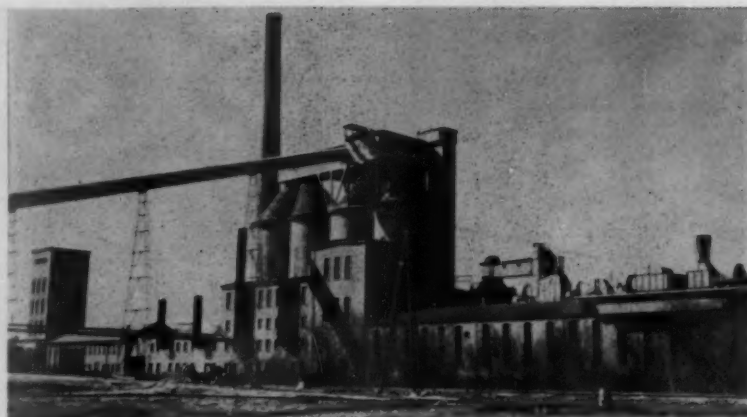
Sulfate pulp production climbed to 1,408,000 tons against 1,221,000 in 1953. Sulfate market pulp was 918,500 tons, of which 396,000 was bleached and 522,500 unbleached. This was a healthy 110,000 tons above the 808,500 tons in 1953, of which 352,000 was bleached and 456,500 unbleached.

An estimated 412,500 tons of mechanical market pulp was produced in 1954, compared to 357,500 tons in 1953.

Increased domestic capacity and demand for paper and board sent production up to 1,536,000 tons in 1954, in contrast to 1,352,000 tons in 1953. This was an all-time record well above the pre-war 1937 total of 1,004,000 tons.

Paper and board exports exceeded 1953 by 66,000 tons climbing to 868,000 tons.

PULP EXPORTS HIGHER—Chemical woodpulp exports reached a post-war high of 2,058,430 short tons, but still below pre-war 1937's 2,420,000, when a proportionately smaller share



Makes More Sulfite

Typical of Finnish expansion is this sulfite pulp mill of Jakobstads Cellulosa Ab, which increased its production in 1954 from 44,000 tons to 77,000 tons.

of total production went to domestic production.

1937 SULFITE RECORD STILL STANDS—Sulfite pulp exports in 1954 were 1,230,900 tons compared with 1,211,200 in 1953, but below

1,238,600 tons of 1950 and still short of the record of 1937—1,433,300.

Dissolving pulp shipments reached 383,130 tons in 1954, 22,000 larger than 1953 but 33,000 under 1951.

Sulfate pulp exports dropped slightly to 827,420 tons, off 11,000 from 1953. Bleached sulfate shipments were about the same, the U.S.A. being the largest importer with 88,000 tons, slightly under 106,700 tons in 1953 but 25% above 1952. Total unbleached sulfate exports were 465,300 tons, off about 11,000 from 1953.

Mechanical pulp exports were approximately 394,790 tons, a record over pre-war 1937's 388,410 tons.

SWEDEN—Paper Exports

(In thousands of short tons)

	News	Kraft	Sulfite Wrapp'g	Greasepr'f Parchm't	Board	Total (Includes all other grades)
1937	222	202	128	24	69	694
1946	141	147	82	18	61	493
1949	233	206	90	25	75	683
1950	226	256	105	30	130	816
1951	222	261	110	29	124	811
1952	240	192	61	21	67	624
1953	227	262	76	26	126	784
1954	217	314	88	27	154	868

Source: Authoritative—Special to PULP & PAPER

SWEDEN—Pulp Produced

(In thousands of short tons)

	Mech.	Sulfite Bleached	Sulfite Unbl.	Sulfate Bleached	Sulfate Unbl.	Total Chem.
1937	809	514	1,290	96	1,176	3,076
1946	747	556	802	132	777	2,267
1949	700	671	757	223	828	2,479
1950	794	735	831	272	869	2,712
1951	800	772	858	319	904	2,853
1952	751	698	774	327	793	2,592
1953	612	762*	756	342**	771	2,777
1954	850	860***	850	426**	985	3,121

Source: Svenska Cellulosaforeningen, Stockholm.

*including 332 tons dissolving sulfite pulp

**dissolving grades included

***including 403,700 tons dissolving sulfite pulp

SWEDEN—Paper and Board Produced

(In thousands of short tons)

	News	Kraft	Fine	Board	Total (Includes all other grades)
1937	303	249	79	135	1,004
1946	290	254	110	162	1,074
1949	345	302	110	168	1,186
1950	358	345	112	210	1,301
1951	366	369	133	231	1,401
1952	365	306	122	157	1,202
1953	372	371	123	207	1,352
1954	373	442	127	260	1,536

Source: Authoritative—Special to PULP & PAPER

FINLAND

New Forest Survey Cheers; Finns Like American Machines

Population: 4,200,000; Per capita paper consumption: 124 lbs.

Paper, board and fiberboard mills: 47

Woodpulp mills: Sulfite 20; Mechanical 26; Sulfate 9

Production (short tons) 1954 1953

Paper (inc. board) 1,215,000 1,025,000

Chemical woodpulp 1,734,000 1,248,000

Mechanical woodpulp 788,000 760,000

Wallboard pulp 146,000 116,000

Paper exports 935,000 828,000

Woodpulp exports 1,266,000 1,092,000

Principal paper grades made: All kinds

Principal paper exports to: U.S.A., U.K.,

German Fed. Rep., Soviet Union, Brazil,

Denmark, Argentina, India, China

Principal woodpulp exports to: U.K.,

U.S.A., France, German Fed. Rep., Po-

land, Soviet Union

A recent survey of Finland's forests has given new impetus to her industry. From where Finland stands the future is extremely promising and the industry has accordingly geared its expansion to take advantage of the one product whose lack seriously hampers expansion in Europe. It has the highest

forest percentage to land acreage in all Europe with adequate resources for expansion.

Spurred by this survey Finland has mapped an ambitious ten-year expansion program to increase production of pulp and paper by 100,000 tons yearly.

One cloud mars this rosy picture. Finland lacks capital to expand the way she wants and there is reluctance on the part of free world capital to invest too near the Iron Curtain. Finland may have to finance this expansion alone.

In 1954 Finland fully recovered from her post-Korean recession and reparations payments to Russia. The pulp and paper industry reached new peaks in production as well as exports, and at the same time more pulp was diverted to domestic papermakers.

FOREST SURVEY IS CHEERING—Finland is optimistic because the third National Forest Survey of Finland reveals that approximately 71.7% of Finland's land area is forested. Large-scale swamp drainage operations, selective cutting and a vigorous intensification of silviculture are credited with offsetting loss of nearly eight million acres of forest to the Soviet Union in 1944.

Scotch pine, Norway spruce and birch, all good species and in great demand, account for 97.7% of Finnish forests; alder and aspen comprise the balance. Pine stocks continue to diminish due to extensive use by the sawmill industry.

AMERICAN-BUILT MACHINES—Finland still outranks both Sweden and Norway combined in newsprint production and plans further expansion. At the new Summa mill of Enso-Gutzeit Osakeyhtio on the gulf of Finland a new American-built Beloit Iron Works 282-in. newsprint machine began production in early 1955.

This machine is powered by a General Electric 2000 hp drive with 1750 kw generator, and is said to be the most powerful machine drive in the world. The machine is rated at 2500 fpm and annual production is expected to exceed 90,000 short tons annually. This company has two other American Beloit machines at its Kotka kraft mill.

A new American-made Bagley & Sewall 2200 fpm vacuum pickup newsprint machine rolled out its first tonnage in Sept. 1954 at the new Kaipola mill of United Paper Mills Ltd. This machine features a new type of stainless enclosed headbox with a speed range of 450 to 2200 fpm; a non-removable permanent cantilevered stainless steel Fourdrinier with hydraulically operated Simplex

wire changing unit and a new design vacuum pickup press section completely hydraulically controlled. Its annual capacity is 70,000 tons. A second machine is expected to start up late 1955 or early 1956 and will boost production to 120,000 tons of newsprint yearly. Twelve grinders will back up these two machines.

The Tako board mill of Messrs. G. A. Serlachius Oy in Tampere has added a third cylinder board machine trimming 128 in. With capacity of 18,000 tons a year, total production at this mill will reach 48,000 tons.

Here's a report to PULP & PAPER direct from Finland:

FROM SAWMILLS TO PULPMILLS

By Jouko Koljonen

Information Chief, Central Association of Finnish Woodworking Industries

The year 1954 was very satisfactory for the Finnish industry. The majority of mills were operating at full capacity and many new production records

were established.

In Finland there is a clearly discernible trend towards more highly manufactured products, complete conversion of wood products, and the annual capacity of the pulp and paper industries is continually growing; due partly to expansions and partly to new mills.

By way of illustrating this transition from sawmills to a pulp and paper industry it may be recalled that in 1925 to 1929 sawlogs accounted for an average of 77% of raw materials used by the forest industry, pulpwood for about 20%. In 1935 to 1939 sawlogs were 56% and pulpwood 39% and in 1953 to 1954, sawlogs were 47.5% and pulpwood 46.5%. The balance is consumed by the plywood industry.

Statistics for Finland with this report show paper, chemical woodpulp, board and wallboard production at new all time peaks as well as paper and board exports; all this despite the heavy loss of raw material resources and factories sustained through the

FINLAND—Paper Produced

(in thousands of short tons)

	News	Wrapping	Writing and Printing	Total Paper (Includes other grades)	Paperboard Cardboard Wallboard
1937	463	121	56	669	172
1949	425	107	62	623	173
1950	460	123	86	700	237
1951	458	141	122	756	355
1952	480	136	108	755	255
1953	484	178	123	824	332
1954	493	257	143	934	421

FINLAND—Paper Exports

(in thousands of short tons)

	News	Wrapping	Writing and Printing	Total Paper (Includes other grades)	Paperboard Cardboard Wallboard
1937	422	101	45	572	133
1949	384	67	43	502	101
1950	417	75	59	557	153
1951	422	87	90	609	238
1952	433	85	78	604	143
1953	443	122	94	671	206
1954	432	183	103	734	267

FINLAND—Pulp Produced

(in thousands of short tons)

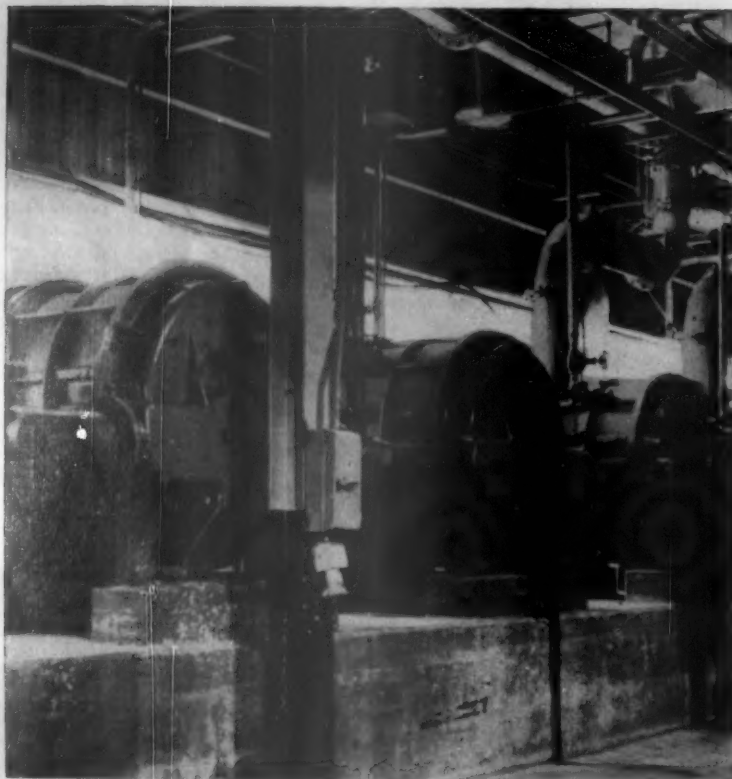
	Mechanical	Sulfite	Sulfate	Total Chemical
1937	904	1,143	483	1,626
1949	659	690	429	1,119
1950	793	791	525	1,316
1951	889	905	623	1,528
1952	797	786	488	1,274
1953	877	718	530	1,248
1954	934	955	778	1,733

FINLAND—Pulp Exports

(in thousands of short tons)

	Mechanical	Sulfite	Sulfate	Total Chemical
1937	321	908	392	1,300
1949	176	495	343	838
1950	195	566	403	969
1951	231	655	427	1,082
1952	158	525	271	796
1953	225	511	356	867
1954	213	640	413	1,053

What, actually, do Vacuum Pumps on paper machines handle?



Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

NASH ENGINEERING COMPANY
443 WILSON ROAD, SO. NORWALK, CONN.

cession of territory under the Peace Treaty after World War II.

HAS EUROPE'S BIGGEST PULP MILL—Major enlargements completed in the cellulose industry in 1954 include the Kaukopaa sulfate pulp mill belonging to Enso-Gutzeit Oy which increased its capacity from 180,000 to 220,000 short tons yearly; the sulfate pulp mill of Sunila Oy which increased from 100,000 to 165,000 tons and Kymin Oy-Kymmene Ab which expanded its Kymmene sulfite pulp mill from 66,000 to 110,000 tons.

Finland now has the three largest cellulose mills in Europe: Kaukopaa, Sunila and Oulu mills.

In the paper industry the new kraft paper mill of Enso-Gutzeit in Kotka increased its capacity from 100,000 to 130,000 tons and a new newsprint mill started production in Summa. Veitsiluoto Oy has built the northernmost paper mill in Finland (66th parallel). This mill has a Finnish Valmet machine with a capacity of 38,000 tons yearly of wrapping and printing papers. Tervakoski Oy has a new high grade paper machine of Finnish make.

Total capacity of the Finnish chemical pulp industry is now about 2,000,000 tons annually. It is estimated that this will grow to 2,200,000 tons in a few years with an eventual rise in the near future to some 2,400,000 tons. The board industry is also expected to expand.

THE NETHERLANDS

Biggest Year for Dutch Mills; More Machines Start in 1955

Population: 10,426,000; *Per capita paper consumption:* 105 lbs.

Paper Mills: 20; *Strawboard Mills:* 19

Production (short tons) 1954 1953

Paper (incl. board) 468,577 424,562

Chemical pulp 40,000 33,000

Mechanical pulp 71,000 63,000

Newsprint exports principally to: Belgium, West Germany, U.K., Argentina, Brazil, India

Pulp imports principally from: Sweden, Norway, Finland, West Germany

By Henk Voorn

The Netherlands again has its biggest paper year.

Dutch paper mills are now among the most modern-equipped in Europe as the result of improvements in 1954.

Profitable years were had by the three big leaders: Van Gelder Zonen (producing 50% of total production), Berghuizer Papierfabriek and Koninklijke Nederlandse Papierfabriek.

This latter mill has had great success with its Massey-machine-coated paper produced on a new Voith machine (licensed by Consolidated Water

THE NETHERLANDS—Paper Production
(Not Inc. Strawboard)
(In Short Tons)

	News	Book & Writing With Woodpulp	With Woodfree	Kraft Paper	Board	Other	Total
1938 ...	97,329	8,635	47,248	84,655	18,103	23,645	279,635
1948 ...	78,746	17,233	36,074	107,396	24,758	23,875	304,571
1949 ...	81,737	17,470	55,207	104,529	20,589	30,630	310,182
1950 ...	87,680	20,240	66,550	116,500	30,250	29,480	350,900
1951 ...	100,980	26,180	79,090	168,310	*	29,590	404,470
1952 ...	106,700	32,670	67,200	128,800	*	27,680	363,880
1953 ...	106,792	42,147	81,431	166,257	*	27,935	424,562
1954 ...	113,437	48,349	84,376	192,135	*	30,282	468,577

* Included in preceding column.

Power & Paper Co., U.S.A., to use process invented by Peter J. Massey of Chicago).

Holland makes all kinds of paper except vegetable parchment. Its strawboard industry is a dominant portion of its pulp and paper manufacturing.

HENK VOORN, Editor, *De Papierwereld*, Dutch paper trade journal, writes this year's report on The Netherlands for World Review Number. He is only 35 this year and started his journal nine years ago.



Several new paper machines are expected to speed up production in 1955. Van Gelder Zonen has three new machines on order for delivery this year. A 4.8 meter (188 in.) newsprint machine designed for 600 meters a minute (approx. 1966 fpm) will be the most modern and fastest machine in Europe. A kraft machine, 5.1 meters wide (200 in.), will be equipped with the world's largest m.g. cylinder. Their third machine on order is a 3.6 meter wide (141 in. approx.) for making printing paper.

Berghuizer Papierfabriek has pur-



Maastricht Mill Uses U.S.A. Coating Process

Great success has been had with machine-coated paper on a new Voith (German) machine by the Peter J. Massey process (Consolidated Water Power & Paper Co. U.S.A. license) at this Maastricht mill of Koninklijke Nederlandsche Papierfabriek. Coating machine started up in 1952. Mr. Massey, who developed this high speed letterpress coating process, lives in Chicago. (Photo Courtesy Royal Dutch Air Lines)

THE NETHERLANDS
(Pulp Consumption in Short Tons)

	Ground Wood	Chemical Woodpulp	Waste Paper	Rags
1938	157,128	65,333	58,636	9,398
1939	15,131	81,525	71,193	10,055
1946	41,846	72,527	11,556	60,095
1948	80,997	102,137	105,108	142,983
1949	80,384	115,208	91,685	17,604
1950	90,100	116,070	97,570	193,604
1951	60,000	36,000	—	—
1952	63,000	40,000	—	—
1953	190,000	113,000	—	—
1954	218,000	126,000	—	—

NETHERLANDS—Pulp Produced
(In Thousands of Short Tons—
U.S. Pulp Producers Assn.)

	Sulfite	Mech.
1949	35	42
1950	40	66
1951	38	64
1952	37	63
1953	33	63
1954	40	71

THE NETHERLANDS—Strawboard
(In Short Tons)

	Produced	Consumed	Exported
1951	357,500	112,000	240,000
1952	231,000	87,560	140,000
1953	300,000	NA	NA
1954	345,698	126,359	219,339

chased a 3.9 meter wide (153 in.) for greaseproof papers and the corrugated paper mill of Philips Eindhoven has on order a 2.5 meter wide (approx. 98 in.) machine for making wrapping paper.

Other machines are reported to be considered but it is not known whether the machines will arrive this year.

Dutch Windmill Runs Paper Mill

Last paper-windmill in the world is this one, "De Schoolmeester" in The Netherlands. It used to be source of power for many low countries paper mills.

Minor investments call for jordans, suction pickups and other devices and for rebuilding and modernizing old machines.

A foundation for research into the history of the Netherlands paper industry has been set up in Haarlem by the Assn. of Papermakers in the Netherlands. In 1954 it issued a series of articles on the history of old Dutch paper mills. To date the foundation has assembled much historic data.

HANS ALLO, Chemical Supt., Van Gelder Zonen, N.V., which makes 50% of Dutch paper produced at home. Picture taken by P&P editor during recent U.S. tour.



50TH YEAR OF INDUSTRY ORGANIZATION—The Assn. of Papermakers in the Netherlands celebrated its 50th year in 1954 with a festive meeting and dinner.

The Dutch industry employs approximately 7,050 mill and 1,200 office workers.

A fire broke out last year in the big newsprint mill of Van Gelder Zonen at Velsen, which severely damaged one of the paper machines. By speeding up production in other mills and quickly repairing the machine, practically no production was lost.

The Institute for Fiber Research in Delft is studying future potentials for that field. This institute has much new equipment.



EUROPE

AUSTRIA

Pulp and Paper Now Ranks No. 3 Industry of Nation

Population: 7,100,000; Per capita paper consumption: 69 lbs.

Paper mills: 57. Pulp mills: 44
Production (short tons) 1954 1953
Paper 486,906 395,143
Chemical woodpulp 408,729 324,380
Mechanical woodpulp 152,243 126,377
Paper imports 3,874 1,892
Paper exports 260,569 205,273
Woodpulp imports 12,941 2,021
Woodpulp exports 151,343 126,378
Principal exports to: West Germany, Italy, France.
Principal imports from: Germany, Sweden, U.S.

Austria's new-found, though uneasy, independence—since Russia finally agreed to set it free—came at a time when its pulp and paper industry was reaching new heights. New record production capacities, spurred by insatiable export demands and increased domestic demands have put the pulp



PROF. KARL ADAMIK — he heads Institute of Pulp and Paper Technology, University of Graz, Austria, now two years old. Built on war-bombed area with American aid funds.

and paper industry in third ranking position in Austria.

Production capacities rose 50%, mostly in newsprint, cardboard and kraft papers. Newsprint alone rose to 121,000 short tons in 1954. All paper production totaled a record 487,000 tons, up 90,000.

Pulp production increases were mainly in sulfate and dissolving pulps.

Pulp production reached 560,927 tons, about 110,000 tons over the previous year's mark, which was a record, too. Austrian pulp exports climbed to 150,000 tons.

Total pulp, paper and board exports were up 24% above 1953, and comprised 11% of all Austrian exports. West Germany and Italy together took 43%, other European countries, 28%, 19% went to the Near, Middle and Far East, 4% to South America and 6%

to other overseas countries.

Domestic consumption increased from the pre-war level of 43 lbs. per person to 68 lbs., an increase of 57%.

MAJOR HELP COMES FROM U.S.A.—Austria has made a phenomenal economic recovery due in large part to the rehabilitation of the pulp and paper industry with financial aid from the U.S.A.

This extensive investment program started in 1950 and was virtually completed in 1954 with the installation of 14 new machines including one cardboard machine and the complete rebuilding of 22 paper and cardboard machines. Austria's pulp and paper industry has been one of the principal beneficiaries of FOA assistance.

The forests of Austria are plentiful and it has been conjectured whether Austria with this natural wealth, plus increased pulp and paper capacities and expanding hydro-electric resources, aims at becoming a new "Scandinavia," profiting from her ideal location at the focal point of the European continental trades routes linking East and West.

LOSS OF SOVIET PULPWOOD BOOSTS PRICES—This abundance of forests augurs well for the long range future of the pulp and paper industry in Austria. But with Soviet timber exports declining, Austrian pulpwood producers might find themselves in a seller's market and accordingly raise prices.

Production costs were affected seriously in 1954 by pulpwood price increases of 50% or more, which were caused by an export boom in pulpwood and general wage increases.

Export paper prices increased an average of 12% but pulp export prices were stable with only slight variations. Export prices for hand-made and machine boards showed little changes.

Wood consumption has increased from 1.9 million festmeters (cubic meters) in 1937 to 2.7 million in 1954. Slabs and pine woods previously used for fuel have found greater utilization for pulp.

The Austrian pulp and paper industry employs some 21,000 people; an additional 80,000 wood workers, printers and paper converters are dependent, also.

The importance of Austria's industry is shown by the visit in Sept., 1954 of representatives of the West German Paper Wholesalers Assn., at the invitation of the Austrian Pulp and Paper Producers to discuss expanded exports to West Germany.

A NEW MILL IN STYRIA—The Austrian Paper and Cellulose Chem-

AUSTRIA—PAPER AND BOARD PRODUCTION (in short tons)

Year	Newsprint	Book Paper	Wrapping Paper	Fine & Special	Paperboard
1937	69,718	117,326	57,475	10,791	70,510
1950	78,316	101,661	66,102	16,602	64,939
1951	83,964	110,081	73,096	20,341	74,568
1952	82,037	109,028	62,946	22,266	70,084
1953	92,249	133,901	71,866	28,323	68,804
1954	116,166	151,754	100,905	32,883	85,196

AUSTRIA—PULP PRODUCTION (in short tons)

Year	Sulfite	Dissolving	Sulfate	Mechanical
1937	255,453	13,893	24,948	106,436
1950	209,129	42,096	23,816	102,672
1951	215,557	58,711	25,694	116,276
1952	209,509	48,947	25,066	108,043
1953	237,213	49,828	37,340	126,378
1954	267,366	59,534	81,829	152,243

AUSTRIA—PAPER AND BOARD EXPORT (in short tons)

Year	Newsprint	Book Paper	Wrapping Paper	Fine Paper	Paperboard
1937	61,972	31,867	29,148	5,955	35,970
1950	48,522	51,715	15,301	8,599	13,889
1951	51,533	54,704	18,484	9,530	18,777
1952	54,124	50,093	11,023	13,624	13,845
1953	60,981	81,690	20,304	19,546	22,752
1954	83,088	90,581	36,594	20,931	29,373

AUSTRIA—PULP EXPORT (in short tons)

Year	Sulfite	Dissolving	Sulfate	Mechanical
1937	136,423	12,737	10,340	20,669
1950	87,052	11,905	8,963	6,391
1951	70,253	18,016	9,457	6,106
1952	71,329	11,450	7,920	5,255
1953	84,161	19,451	13,278	9,483
1954	87,657	24,490	34,259	4,937



FANCYWORK QUEEN-1897

This twinkling, alert lady found *her* teen-age fun in organized groups devoted to embroidery, crocheting, fancywork of every kind. And for 54 full years at Appleton Woolen Mills, Bertha Renner has applied that same needle skill and interest to burling—the vital inspection and reweaving operation which insures perfection in every square inch of Appleton felts.

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APPLETON WOOLEN MILLS

APPLETON, WISCONSIN



ists and Technologists held a conference in Sept. 1954, to discuss the latest technological achievements. They visited the new Muerztal newsprint mills in Styria, owned by Holzstoff und Papier Fabrik A.G., in Bruck and der Mur.

Daily capacity of the Muertal Mills is 133 short tons with machine speed up to 1150 fpm. Increased domestic and export demand will require enlarging of its machine, increasing daily capacity to near 200 tons and speed to 1750 fpm.

SWITZERLAND

How Its Industry Has Grown Since It Was Founded in 1411

Population: 4,900,000; Per capita paper consumption: 141 lbs.

Paper mills: 85; Woodpulp mills: 8

Production (short tons)	1954	1953
Paper	341,000	296,000
Chemical woodpulp	94,000	77,000
Mechanical woodpulp	99,000	88,000
Paper imports	15,070	11,993
Paper exports	10,261	5,828
Woodpulp imports	45,125	27,366
Woodpulp exports	3,999	4,958

Principal paper imports from: Germany, Austria

Principal woodpulp imports from: Sweden, Finland, Austria, Canada

Principal paper exports to: Italy, Germany

Principal woodpulp exports to: Italy, France

By Siegfried H. Aeschbacher
Manager of Balsthal Paper Mills

Business activity during 1954 was good and all machines were on full-time production. A 5% price rise in Feb. 1954 did not in any way influence this trend. This rise didn't affect tissues and hygienic papers due to very intense foreign competition when prices were heavily undercut by Austria and to a certain extent Western Germany.

The entry of American competition on the European woodpulp market slowed down the trend toward higher prices of Scandinavian cellulose. Difficulties in procuring pulpwood from abroad were experienced because the price was raised considerably.



What a Spot for a Paper Mill

Midst beautiful Swiss scenery, 75-year old Balsthal Paper Mills, is one of Switzerland's 17 mills which produced 341,000 tons, up 45,000 from 1953 production. This mill also makes groundwood pulp.

Despite this, prospects for 1955 are quite favorable. Demand for pulp and paper is still rising and prices show a steady tendency.

An enormous expansion in Swiss paper production has been achieved without increasing the number of paper mills between 1900 and 1952. In fact, during the first half of the twentieth century more old mills were shut than new ones established.



SIEGFRIED H. AESCHBACHER, Manager, Balsthal Paper Mills, authors this up-to-date report on Swiss industry and delves back into past to trace phenomenal growth since 1411.

The expansion stems from a continuous modernization, improvement and rationalization of technical equipment.

Characterizing the technical progress made since 1882 is the fact that the number of new paper machines increased only a modest 10, from 31 to 41, while the number of employees more than doubled; the resultant output amounts to over 14 times production 70 years ago.

HISTORY OF SWISS INDUSTRY—The origin of papermaking in Switzerland dates back to the 15th century. From documents of 1411, we know the first mill was situated at Marley near Fribourg. Numerous other paper mills were founded at short intervals all over Switzerland.

Today there remain only four paper mills whose beginnings can be traced back between the 15th and end of the 18th century. Two more mills were founded at the beginning of the 19th century. Nine other mills remain which opened their gates between 1857 and 1892. One of these is the Balsthal Paper Mills, founded in 1883. Today there are 17 paper mills in Switzerland. There is one market sulfite pulp mill—at Attisholz.

Newsprint production is about 25% of total output; other printing papers, 25%; writing and envelope paper, 15%; kraft paper, board, 25% and special papers, 10%.

In Europe, Switzerland is surpassed in its per capita consumption only by Sweden.



In Charge of Vita Mayer Expansion

Representing their company in U.S.A., where equipment is being made for Italian firm of Della Cartiera Vita & C., in Milan. They are (l to r) I. G. ROTHSCCHILD, U.S. representative of Vita Mayer & Co., Inc. DR. PIETRO GHISONI, Technical Director, Dr. Ing. BENITO MUTTI and Dr. Ing. GIULIANO BRUSA. The latter trio were in U.S. earlier this year.

SWISS PRODUCTION

(In Thousands of Short Tons)

	Sulfite Pulp	Groundwood	Newsprint	Other Printing Paper	Wrapping Paper	Other	All Paper	Paper Board	Paper and Board Total
1935	45	43	34	29	22	27	112	40	152
1945	62	52	40	36	35	34	145	44	189
1949	72	69	50	44	42	40	176	51	227
1950	80	77	52	50	45	40	187	55	242
1951	97	87	55	55	53	57	220	66	286
1952	85	88	55	56	53	61	225	71	296
1953	77	88	60	55	44	60	219	77	296
1954	94	99	66	64	53	70	253	88	341

World-Wide in Scope...

PERSONAL IN RELATIONSHIP



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Barcelona, Spain
Norrköping, Sweden

ITALY

Pulp Imports Rise, as Output Declines, to Meet Demands

Population: 49,000,000; Per capita paper consumption: 35 lbs.

Paper mills: 503. Woodpulp mills: 44.

Straw or vegetable pulp mills: 17

Production (short tons)	1954	1953
Paper	812,184	733,920
Chemical woodpulp	79,200	89,760
Mechanical woodpulp	179,062	179,578
Straw & other pulp	33,770	27,720
Paper imports	56,577	58,784
Paper exports	17,994	9,243
Woodpulp imports	254,969	212,146

Principal paper grades made:

Newsprint	140,580 tons
Kraft	66,000 tons
Book and writing	233,933 tons
Paperboard	107,517 tons

Principal paper imports from: Austria, Sweden, Finland

Principal woodpulp imports from: Sweden, Austria, Finland

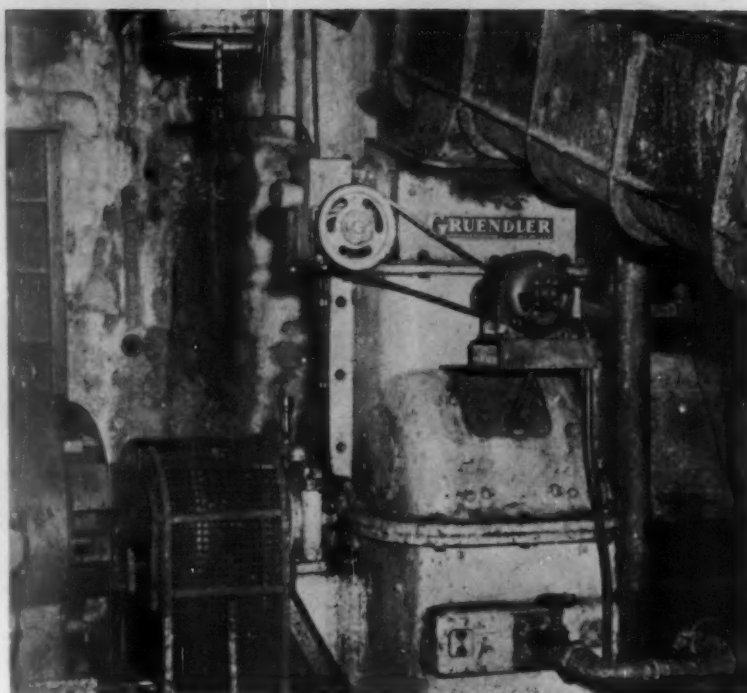
Principal paper exports to: U.K., India, Egypt, Middle East

The Italian pulp and paper industry made heroic efforts in 1954 in its attempt to satisfy increasing per capita consumption. Nonetheless, Italy is still a major importer of pulpwood and pulp.

Prospects are good for the industry, if and when it can keep abreast of domestic demand and a bright future is in store if Italy's low consumption of paper is raised.

Italy's forests extend over 19.2%, some 21,797 sq. mi., of which 19% are conifers. The allowance cut is an estimated 14% under annual net growth and an F.A.O. study reveals 60% is cut under good practices, 10% under fair and 30% under poor or destructive practices. The industry's achievement in pulping the abundant black poplar species for mechanical pulp, is said to be outstanding. Increasing rayon pulp production includes use of the giant cane, a species of reed.

Italy imports about one-third of her



American Equipment in Italy

This picture of a Gruendler Crusher & Pulverizer Co. (St. Louis, U.S.A.) refiner in the Vita Mayer & Co. kraft mill near Milan, Italy, was sent to PULP & PAPER by Dr. PIETRO GHISONI, Technical Director of the Italian firm who has made two recent trips to America for the U.S. industry's last Paper Week and its Alkaline Pulping Conference in Houston, Tex., where he gave a paper.

Dr. Ghisoni said knots separated by a flat Jonsson screen and processed in a hammer mill, and also fine bundles of fibers separated in Lindblad and Apmew screens, both go to this Gruendler Refiner for debfibrating. There are further steps—decking, refining and passing through Bird Machine Dirts. A good pulp results, he said.

Vita Mayer is going to also install a Beloit machine made for it in U.S.A. pulp requirements. Increasing importance is noted in the rise of dissolving pulps, which are now 25% of chemical pulp imports. Austria is running a close second to Sweden in importance of pulp exports to Italy, with Finland, West Germany, Norway and U.S.A., following. U.S. exports are principally dissolving grades.

PULP PRODUCTION DROPS—High pulpwood costs are blamed for Italy's

pulp industry not hitting its estimated total chemical pulp capacity of 227,000 tons. Chemical woodpulp production in 1954 was 79,200 tons, slightly below 1953 (89,760). Approximately 67% of chemical pulp is produced in Northern Italy, 32% in Central Italy and 1.1% in Southern and Insular Italy.

Mechanical and semi-chemical pulp

ITALY—WOODPULP CONSUMPTION

	(Short Tons)			
	Chemical Pulp			Total
	Dissolving	for Paper & Board	Mechanical	Woodpulp
1937	0	31,010	161,766	192,776
1940	17,956	(?)	163,397	(?)
1947	17,613	40,958	106,288	164,859
1949	47,829	59,769	119,213	226,811
1950	48,141	60,296	140,873	249,310
1951	58,986	93,365	155,278	307,629
1952	37,332	85,979	156,726	300,037
1953	36,200	106,920	162,845	305,965
1954	64,033	112,976	163,004	340,000

ITALY—PAPER PRODUCED

	(In Short Tons)					
	Newsprint		Kraft Paper		Other Paper & Paperboard	
	Pro-duced	Con-sumed	Pro-duced	Con-sumed	Pro-duced	Con-sumed
1938	82,687	84,362	31,972	32,028	413,437	411,182
1950	94,705	98,233	44,100	45,203	396,900	410,792
1951	115,270	117,758	60,406	63,492	454,870	408,574
1952	123,503	129,897	58,973	63,272	467,329	458,731
1953	127,600	150,920	59,400	67,100	546,700	565,440
1954	140,580	162,800	66,000	80,630	605,604	607,316



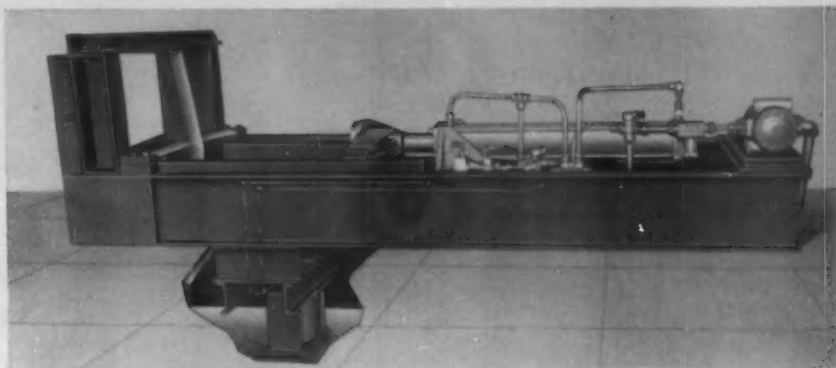
Makes Bleached Semi-Chemical Pulp

Only mill of this type in Italy is Cartiere L. de Medici, at Cirie, near Turin. It uses 80% aspen waste from sawmills and veneer plants, making up to 10 tons a day. Here in its pulp mill, 1 to r: Rotary screens, decker, unbleached storage chest, two rotary digesters in background, and wet machine. High along wall is riffler. In foreground, a load of pulp. Using virtually the same equipment throughout, it at times makes bleached wheat straw pulp.

How to . . .

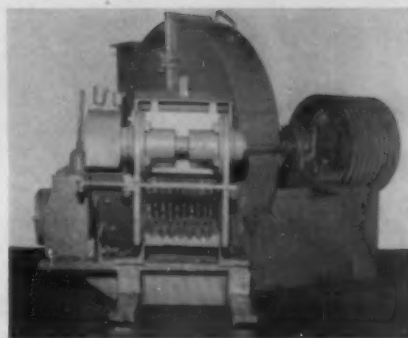
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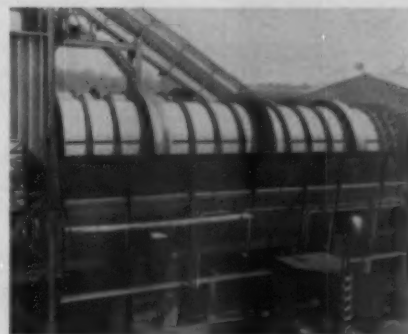
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CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK



EUROPE

ITALY—Paper Imports-Exports (in short tons)

Year	Import	Export
1948	28,519	17,042
1949	28,480	15,035
1950	31,911	15,316
1951	19,935	57,692
1952	27,403	24,156
1953	58,784	9,243
1954	56,557	17,994

production in 1954 stood at 179,062 tons against 179,578 in 1953. Some 80% of this comes from Northern Italy, 17% from Central and 2% from the Southern area.

The production of straw pulp or other vegetable fiber pulp attained 33,770 tons in 1954, up from 27,720 in 1953.

Total woodpulp imports climbed from 212,146 tons (192,964 tons chemical) in 1953 to 254,969 (235,964 chemical) in 1954. About 95% of mechanical pulp is produced from locally grown poplar while, according to one source, Italy's mills depend almost entirely on imported pulp for chemical pulp. The largest Italian woodpulp importer is said to be the Societa Nazionale Cartiere, a cooperative buying group including many mills. This organization reportedly took more than 50% of total Italian woodpulp imports.

REPORT 22 MORE MILLS—Italy's paper mills were joined by 22 new mills to bring their total to 503 in 1954. Total paper and board production reached a new high of 812,184 tons, in comparison to a total of 733,920 in 1953. Total paper production was 704,667 tons of this while board production was 107,517 tons.

Northern Italy is the big paper producing sector, with about 73.43% or 596,377 tons. Central Italy ranks second with 21.23% or 172,403 tons



COMM. GIOVANNI GHERARDI (left) is Gen. Mgr. of Cartiere L. de Medici, Italy's only bleached semi-chemical pulp mill. V. DEBIN (right) is Consulting Engineer.



Digesters at Torviscosa

This line-up of 11 digesters is in pulp mill of Snia Viscosa at Torviscosa.

and Southern and Insular Italy third with 5.34% or 43,404 tons.

VITA MAYER INSTALLING U.S.A. EQUIPMENT—One of Europe's most modern mills, and one of Italy's leading, Vita Mayer & Co., is expanding production capacity of its kraft mill near Milan. Dr. Pietro Ghisoni, technical director, advised PULP & PAPER that a new high speed (2,500 fpm) 240 in. Beloit tissue machine, with Ross Engineering hood and air system and 5 Sutherland Refiners are being installed. Tissue production is expected to be about 50 tons daily. A portion, possibly facial tissue, may be sold outside Italy.

Dr. Ghisoni has also sent a report on the Gruendler Crusher & Pulverizer Co. refiner in his mill, in which he says that knots separated by a flat Jonsson screen and processed in a hammer mill, and also fine bundles of fibers separated in Lindblad and Apnew screens, both go to this Gruendler Refiner for defibrating. Further steps are decking, refining, and passing through Bird Machine Dirts.

BELGIUM—PAPER PRODUCTION (in thousands of short tons)

	News	Book and Fine	Wrapping and Coarse	Total Paper	Paper Board	Total Paper and Paperboard
1939	52	85	85	235	26	261
1948	48	98	87	245	26	271
1950	68	105	113	304	23	327
1951	67	93	120	304	54	358
1952	58	75	90	246	36	282
1953	61	79	117	270	37	308
1954	57	84	134	291	45	335

BELGIUM

Competitive Obstacles Removed, It Reaches for New Records

Population: 8,800,000; Per capita paper consumption: 108 lbs.

Paper mills: 28 Woodpulp mills: 5

Straw or vegetable fiber mills: 1

Production (sh. tons) 1954 1953

Paper 334,932 307,833

Chemical woodpulp 45,264 36,733

Mechanical woodpulp 58,317 58,258

Straw & other pulp 7,079 2,475

Paper imports 185,430 142,841

Paper exports 65,252 60,500

Woodpulp imports

(mech.) 129,985 121,183

Woodpulp exports

(mech.) 19,690 14,740

Principal paper grades made: Newsprint, Kraft, Sulfite, Book and Writing, Paperboard

Principal paper imports from: Netherlands, Sweden, Finland, Norway

Principal woodpulp imports from: Sweden, Finland, Norway, Canada

Principal paper exports to: Netherlands, West Germany, Sweden, Britain

Principal woodpulp exports to: France, West Germany

Belgian pulp and papermakers operating at full capacities, reached for new records in 1954. But paper fell short of the 1951 record by some 24,200 tons. About 335,000 tons were made. This was due mainly to the closing of three paper mills since 1951, their best year. However, total pulp production, including straw, was 110,600 tons, a record.

The industry is expected to reach new peaks in 1956 when industry-wide modernization coupled with the

BELGIUM—PULP

(in thousands of short tons)

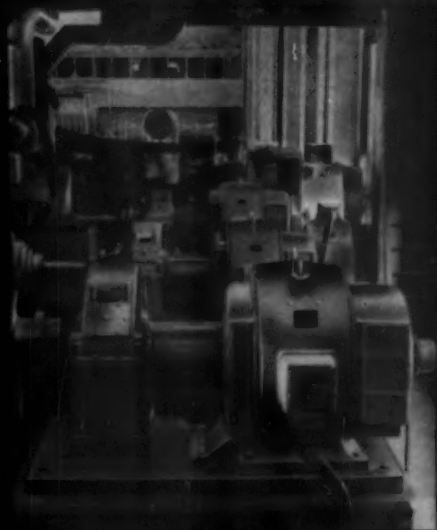
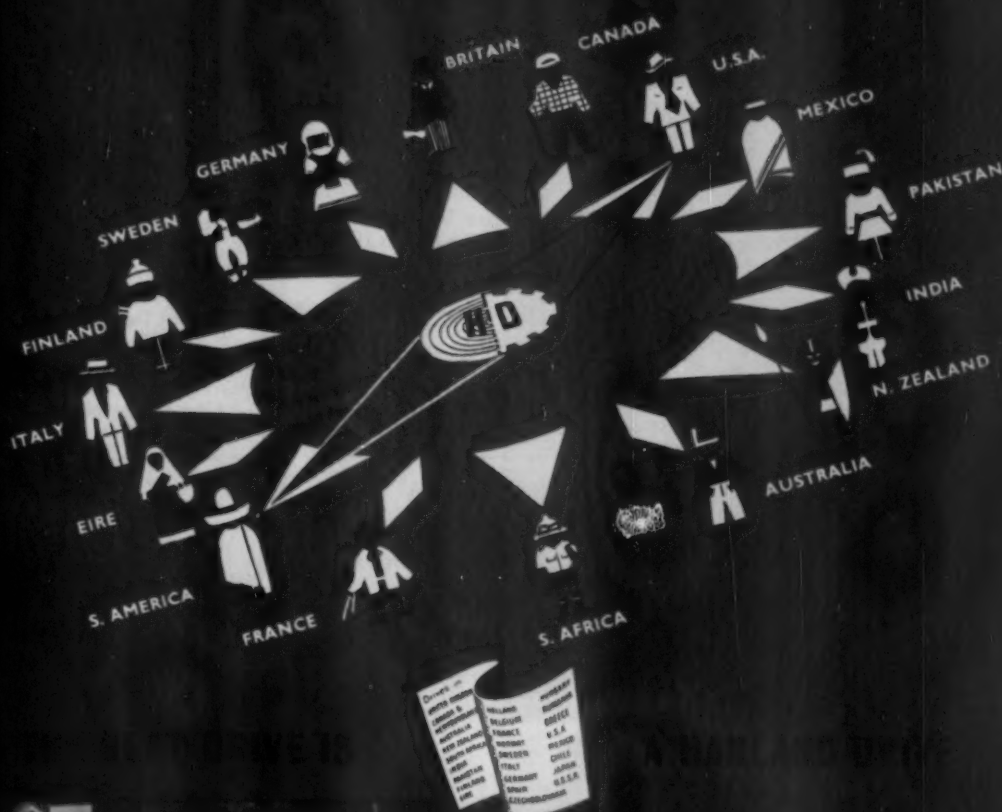
	Production Chem.	Mech.	Consumption Chem.	Mech.
1939.....	28	36	155	65
1949.....	20	42	116	75
1950.....	31	50	144	88
1951.....	43	60	196	91
1952.....	34	55	100	68
1953.....	36	58	123	75
1954.....	45	58	143	71

BELGIUM—PAPER CONSUMED

(short tons)

	Newsprint	Total Paper & Paperboard
1936.....	89,300	296,000
1949.....	77,100	346,800
1951.....	87,700	407,400
1952.....	79,500	343,310
1953.....	90,820	405,994
1954.....	101,764	462,844

wherever paper is made



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Back of every Harland Drive is the experience of fifty years service to the paper industry; experience of all that is best in control technique; and experience of operating conditions the world over. Every Harland Drive is designed for its specified job and for positive, fast, accurate inter-section control and ease of maintenance.

The Drive shown is on a Bagley & Sewall 290 inch 2200 f.p.m. Newsprint Machine in Finland. The section driving units are, reading towards the camera, Couch Roll, Suction Pick-up Roll, Wire Drive Roll, Transfer Press, 1st Press and 2nd Press.

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installation of three new machines, will help Belgian papermakers keep pace with rising domestic consumption, which jumped 12.5% in 1954 to 106 lbs. per capita. Per capita consumption in 1952 was only 65 lbs. and was 95 in 1953.

Two major deterrents to a prosperous pulp and paper industry in Belgium were removed in 1954. Duty-free Dutch exports to Belgium, made by lower paid workers, had been having a disastrous effect, according to a report to PULP & PAPER from H. Vincent, director general and J. Polsky, secretary general of Papeteries de Belgique, Brussels. The second deterrent was the stiff competition among Belgium's own papermakers.

WILLIAM F. BOKS, Administrator for Gross & Irgens, woodpulp sales firm, who sends special report to PULP & PAPER on Belgian industry.



Major wage increases in 1954 in the Dutch industry seriously hampered exports to Belgium. Belgian papermakers removed the second impediment by taking another look at their own competitive efforts and regulated production according to grades of each mill, to permit longer mill runs.

As a result of these changes, domestic production rose 6.8%, supplying 57% or 335,000 short tons of domestic consumption. Exports rose 19% to 72,050 short tons while imports increased 21.9% to 198,000 tons.

NEW MACHINES INSTALLED—

Two giant newsprint machines, an English make and one of Swedish manufacture, were being installed in 1955 and a fine paper machine is expected to start production in 1956. Present modernization and improvement plants are directed towards added production for newsprint and kraft papers, reports Messrs. Polsky and Vincent.

By William F. Boks
Administrator General,
Gross & Irgens, Antwerp

The favorable situation in the Belgian paper market, which began in mid-1953, prevailed during 1954 and continued high demand forced all of Belgium's 28 paper and board mills to run at full capacity.

Consumption continues to increase, as the result of a general increase in the standard of living and of many new applications for paper, particu-

larly in packaging.

Financial results of 1954 were very favorable and most of our paper mills paid substantially higher dividends than in 1953.

Competition from Holland, so disastrous two years ago, has eased. This is partly because of major wage increases in Holland, but primarily due to intensive efforts of the Belgian industry to cut costs by agreements regulating each mill's production according to its grades. Longer manufacturing runs thus have brought lower production costs.

This efficiency drive has increased output per man from 38.8 tons in 1952 to 50.9 tons in 1954.

In the near future, Belgium will be self-supporting as regards newsprint and will even have some for export. Also in fine papers, production is being stepped up by addition of a new machine and extensive modernization of existing machinery.

YUGOSLAVIA

Despite Tito-Soviets Parley Pulp Is Exported to Westward

Population: 16,850,000; Per capita paper consumption: 11 lbs.
Production (short tons) 1954 1953
Paper 73,195 73,093
Chemical Pulp 47,901 39,658
Mechanical woodpulp 21,597 20,892
Paper & paperboard imports 24,137 16,739
Paper & Paperboard exports 2,919 5,211
Woodpulp imports 4,838 3,906
Chemical woodpulp exports 14,683 11,381
Principal paper grades made: Cigaret, colored covers and packing paper
Principal paper imported from: Austria, Finland, France
Principal woodpulp imports from: Austria, Sweden, U.S.
Principal pulp exports to: Argentina, England, Germany, Italy, Brazil

Nearly one-third covered by abundant and accessible forests, Tito's Yugoslavia rates a high fifth position in forested area (19,068,637 acres) among Europe's 26 countries. Forest industries rank third among industries in this nation, which is fast becoming an important pulp and paper exporter in Southeastern Europe.

Argentina, Great Britain and West Germany took a lion's share of the 14,683 tons of woodpulp exported in 1954, while the bulk of meager paper and board exports went to Turkey and Italy. This new and rising paper producer so close to neighboring Italy may prove a sturdy competitor to the Italian paper industry.

Tremendous strides have been made by the industry since 1939. Groundwood pulp production has jumped from 10,338 tons in 1939 to 21,597

YUGOSLAVIA—PULP-PAPER

(In Thousands of Short Tons)

	Production			Exports Sulfite Pulp
	Sulfite Pulp	Mech. Pulp	Paper	
1951	34	23	66	21
1952	37	17	61	5
1953	40	21	72	11
1954	48	22	74	14

tons in 1954; chemical pulp from 31,156 tons to 47,901 tons; paper and board from 61,717 to 73,195 tons.

A new sulfite pulp mill was scheduled to come into production in Prijedor, Bosnia-Herzegovina, sometime in 1955, with a capacity of 37,730 tons, according to Milos Macura, deputy director of the Federal Statistical Office of the Federative People's Republic of Yugoslavia. This new mill is in addition to the Fabrika Celluloze y Prijeddu, also in Prijedor, which was built in 1951. This has been to date the only export pulp mill in the country.

A new kraft pulp and paper mill for cement bags is being built in Maglaj, Bosnia-Herzegovina, for both domestic and export markets. Previously these bags have been imported.

In industrial Slovenia, at Krsko Viden, a newsprint mill, now being erected, is expected to supply the country's full newsprint needs, which up to now have been imported.

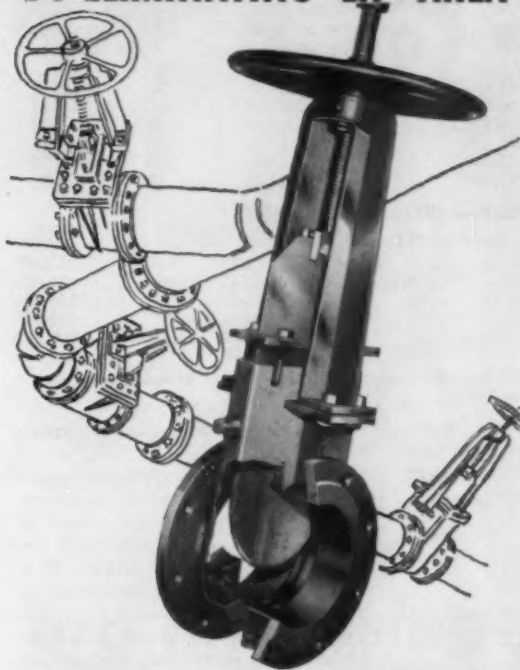
Viscose fibers and some paper grade pulps will be produced at a new pulp mill in Loznia with annual capacity of some 24,000 tons.



Yugoslavia's First Large
Pulp Mill

Digesters in Yugoslavia's first large pulp mill in Prijedor, Republic of Bosnia-Herzegovina, recently enlarged to keep up with growing domestic and export demands for woodpulp.

PREVENT STOCK BUILD-UP BY ELIMINATING "LIP" AREA



WITH NEW ECONOMY "RUBBER SEATING" FABRI-VALVE

New "Rubber Seating" Fabri-Valves completely eliminate "lip" area leaving nothing for stock to "hang up" on. Rubber seats press tightly together when gate is open (see illustration) insuring free flow of heavy solution from port to port. Rubber seats prevent wear and galling on gate, insure tight shut-off for normal flow or back pressure, and can be easily and economically replaced. New "Rubber Seating" Fabri-Valves offer low-cost original installation and reduced maintenance. They cost less...are cheaper to ship and install. Custom fabricated in 4" to 24" size from stainless steel, monel, nickel or any alloy combination.

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PULP & PAPER—1955 Review Number

GRUENDLER TURBO SHREDDER

SOLVES "KNOTTY" PROBLEM IN ITALY



... at Cartiera Vita Mayer & Co., Milano, Italy

Reclaiming of knots, screenings and rejects is no longer a problem in the kraft pulp mill of Cartiera Vita Mayer & Co., of Milano, Italy.

Here, as in other leading paper mills throughout the world, the Gruendler Pulp Refining System is salvaging tons of knots, semi-digested chips, extremely coarse screenings and, in fact, all types and classes of reject material for primary and secondary refining.

Savings possible under this method of pulp refining often amortize the entire cost of the installation during the very first year of operation.

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SPAIN

Paper Replaces Wood Fruit Boxes—Home-made Newsprint

Population: 28,863,182; Per capita paper consumption: 17 lbs.
Paper and board mills: 200; Woodpulp mills: 16
Straw or vegetable fiber pulp mills: 30
Production (short tons) 1954 1953
Paper 279,811 209,355
Chemical pulp 7,172 6,378
Mechanical pulp 37,708 31,605
Straw or other pulp 131,665 126,163
Paper imports 8,030 8,965
Paper exports 430 418
Woodpulp imports 90,200 70,479
Principal paper grades made: Newsprint, kraft, paperboard, cigarette, book and writing.
Principal pulp and paper imports from: Sweden, Norway, Finland
Principal paper exports to: Portugal, Philippines, Ecuador

Immediate and long-range growth potentials highlight the Spanish industry in 1954, sparked by the publication for the first time of a serious, statistical survey on the industry.

Production records were set in Spain as per capita consumption rose, and with vastly increased straw and other vegetable fiber production, the paper industry is expected to set another record year in 1955. The industry is particularly noted for the quality of its esparto and rice straw paper and increasing attention is being given to these and other vegetable fibers as possible sources for future pulping.

A new integrated pulp and paper mill is reported planned near Duenas with an annual capacity of 19,800 short tons of paper with a furnish of 85% straw and 15% esparto.

A SURVEY OF POSSIBLE DEMAND—Using estimated population increases and per capita income rises, Sr. Jose Luis Asenjo Martinez, Spanish economist, has predicted possible paper consumption up to 1967 of 542,000 to 710,000 tons, two or three times that of recent years (see tables).

If this probable demand materializes, the big questions are where the

SPAIN—PULP PRODUCTION (In Short Tons)

	Swedish	Kraft-Soda	Groundwood	Straw	Total
1935	11,025	—	16,337	6,615	34,177
1949	65,210	4,504	21,353	12,224	103,293
1950	101,853	5,887	25,536	13,859	146,866
1951	103,143	6,123	28,350	20,915	158,731
1952	119,020	6,820	37,171	32,630	195,641
1953	85,192	5,797	28,732	29,302	149,223
1954	91,764	6,520	34,280	27,931	160,495

SPAIN—PAPER PRODUCTION

	Fine	Tissue	Newsprint	Kraft	Paperboard	Printing Paper	Total
1953	14,543	1,663	23,166	11,743	55,352	85,064	200,323
1949	10,397	1,653	19,536	4,762	23,686	96,631	156,665
1950	12,429	2,205	22,080	5,179	29,038	117,317	189,292
1951	13,115	2,415	25,270	6,100	32,300	122,350	201,750
1952	13,410	2,750	25,550	10,536	36,448	123,957	212,648
1953	15,378	1,663	23,166	11,743	55,352	85,064	200,323
1954	15,080	3,540	34,475	19,430	34,742	147,107	234,374

PROBABLE DEMAND—PAPER & BOARD (Based on a 4% and 5% rise in per capita income)

(Based on a 4% and 5% rise in per capita income)

Year	%	Newsprint Per cap.		Papers—Other than Newsprint & Board Per cap.		Total Paper & Board Per cap.	
		lbs.	tons	lbs.	tons	lbs.	tons
1957	4	3	41,472	15	248,187	20	289,660
	5	5	44,381	19	272,334	22	316,716
1962	4	4	56,798	22	339,928	26	385,732
	5	4	65,185	27	409,589	31	474,775
1967	4	5	77,689	30	464,861	35	542,551
	5	6	95,543	39	615,139	45	710,683

PULP—PROBABLE DEMAND

Year	%	Mechanical Pulp	Chemical Pulp	Total
1957	4	59,246	151,821	211,067
	5	65,144	166,445	231,616
1962	4	81,148	207,939	289,088
	5	94,785	250,131	344,916
1967	4	110,986	284,367	395,352
	5	140,185	375,352	515,537

Prepared by PULP & PAPER from the economic study, "Future Demand for Paper & Board in Spain from 1952 to 1967."

raw materials will come from; if domestic production cannot meet this demand, can Spain afford to import such quantities of pulp and paper?



News of significant trends in Spain are sent to PULP & PAPER by ANTONIO DE SABATES, General Manager, La Papelera Espanola.

PAPER REPLACE WOOD CONTAINERS

By Antonio de Sabates
General Manager,
La Papelera Espanola

We have considerably increased our output of wood and vegetable pulp. Production of paper and board too, were higher in 1954 than in 1953.

The major portion of this increase is newsprint. After more than 12 years of forced idleness, the large (for Spain) newsprint machine of Papelera del Oarso (Renteria) went into operation in 1954. As a result, Spanish newspapers were able to increase their circulation and number of pages.

Another significant trend in the Spanish paperboard market is the use for the first time of corrugated board boxes as containers for fruit exports, particularly oranges and lemons,

which are the most important exports of our country.

We think that in 1955 the output of paperboard shall go up as the result of the very great advantages of this packaging agent, especially for fruit and other similar articles. It is easy to understand the importance of this market for paperboard mills and base manufacturers if we take into account that more than one million tons of oranges are exported yearly.

We still depend on Scandinavia for a large part of our chemical woodpulp, though we try to utilize fully our national resources. A new situation has arisen with reference to pulp imports, as we have been able to import pulp from the U.S.A. in the first months of 1955.

DENMARK

First Chemical Pulp Mill —a Cooperative in Jutland

Population: 4,300,000; Per capita paper consumption: 141 lbs.

Paper mills: 12; Woodpulp mills: none

Production (short tons)	1954	1953
Paper	138,000	110,000
Mechanical woodpulp	4,070	3,850
Paper imports	170,500	137,500
Paper exports	5,500	4,400
Woodpulp imports	91,894	84,172

Principal paper grades made: Kraft, Sulfit, Book and Writing, Paperboard, Tissue

Principal paper imports from: Sweden, Norway, Finland

Principal woodpulp imports from: Sweden, Norway, Finland

History was made in Denmark on Jan. 1, 1955 when its first chemical pulp mill started production—making bleached straw pulp. Annual capacity is nearly 8,000 short tons.

According to E. Persson, United



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the WORLD!*

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**are increasing production capacity
and operating efficiency!**

Wherever pulp and paper is being made—from Alaska to Australia—you find ROSS Air Systems operating in nearly all departments of the mill. The constantly growing need for larger output in the face of steadily increasing costs for labor, fuel and maintenance have made ROSS Systems standard equipment in progressive mills everywhere to insure maximum operating efficiency and improved working conditions.

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ROSS Calender Cooling



ROSS Pulp Dryer



EUROPE

Paper Mills Ltd. (De Forenede Papirfabrikker), its pulp is a first-class raw material for better grade printing papers.

This new mill, Fredericia Cellulosefabrik, in Jutland, is a joint stock company, 50% of shares held by United and the other 50% by a cooperative company, Dansk Industri-Halm, which is owned by a large group of farmers in that area.

Denmark's paper industry is fast expanding because of recent modernizations in its paper mills, increasing domestic consumption as well as exports. Actually there are no direct exports of paper as such, it is all in packaged foodstuffs, of which Denmark is a major exporter.

Woodpulp imports jumped from 84,172 short tons in 1953 to 92,086 in 1954. Paper and paperboard production increased as well from 111,000 tons in 1953 to 138,600 tons in 1954.

Mr. Persson, in his exclusive report to PULP & PAPER, says consumption has increased considerably in 1954 in his country and domestic production reached new records. This, he comments, was in accordance with the general trends in other Danish industries.

Mr. Persson's company, The United Paper Mills, produces about 90% of Danish paper production in its six paper mills.

DENMARK—Production (in short tons)

	Mech. Pulp	Paper	Paperboard
1939	570	70,000	11,000
1947	120	78,000	19,000
1950	950	91,296	23,507
1951	908	98,933	15,235
1952	2,120	96,000	18,610
1953	3,850	97,023	25,358
1954	4,070		138,000



First Chemical Pulp Mill in Denmark

This new mill, Fredericia Cellulosefabrik, started up Jan. 1, 1953, making bleached straw pulp. It has annual capacity of some 8,000 short tons and is a joint company, 50% owned by United Paper Mills Ltd. (De Forenede Papirfabrikker), and 50% by a cooperative company, Dansk Industri-Halm, composed of farmers in the mill area in Jutland.



Where Republic and Freedom Were Won

Some of the battles that brought freedom to Ireland 32 years ago were fought here—on the River Liffey and the Dublin quays, which are shown in this picture. PULP & PAPER's reports on Ireland came from Dublin.

IRELAND

From Almost Economic Chaos, Irish Are Building Up Industry

Population: 2,933,000. Per capita paper and board consumption: 59.8 lbs.

Paper and board mills, 7. Woodpulp mills, 2. Straw or vegetable fiber mills, 2.

Production (in short tons): 1954 1953

Paper and paperboard 40,320 39,980

Imports—paper and board 64,878 60,960

Exports—paper and board 41,013 22,400

Woodpulp imports 30,198 22,330

Principal paper grades made: Wallboard, paper bag, wrapping.

Principal paper imports from: Canada, Britain, Finland, Sweden.

Principal paper exports to: Britain.

Principal pulp imports from: Sweden, Canada.

Ireland has seven paper mills, two of them making paperboard grades and four with pulp mills.

It exports about three-fourths of the paper and board it makes to England, one of its mills being a Bowater enterprise. But it imports more than it makes to meet its needs. However, only one-fifth of its imports come from England. Canada, Finland and Sweden are other suppliers. It produced

IRELAND—PAPER (In Short Tons)

	Produced	Exports	Imports
1949	10,029	1,239	52,993
1950	22,046	5,242	66,834
1951	24,000	11,364	60,000
1953	39,980	22,400	60,960
1954	40,320	41,013	64,878

40,320 tons in 1954, but imported 64,878 and exported 41,013 tons.

A 200-ton newsprint mill was reported being built in Kenmare, County Kerry, the first on the Emerald Isle. Eventually, it was also to make pulp, kraft paper and tissue. Latest new mill is one at Waterford, National Board & Paper, which started up over a year ago.

It has 478 sq. mi. of forests, only 1.8% of total area.

Ireland imported 241,598 cwt. of newsprint in 1952 from Canada, and less than 100,000 cwt. each from Britain and Finland, and that is probably about the ratio of its current newsprint imports from these countries.

It makes chipboard from waste paper, importing some of the waste, but its woodpulp imports, all from Sweden apparently, rose to 30,198 short tons last year as compared with 22,330 in 1953.

PAPER OUTPUT CLIMBING—Total paper output of 40,320 short tons was up from 39,980 in 1953 and 36,500 in 1952, according to statistics sent to PULP & PAPER by the Central Statistics Office of the Irish Republic in Dublin. This includes wallboard, from about 7,000 to 10,000 tons last year.

A variety of other papers are made—bag, wrapping, manila, writing, printing (other than newsprint), plaster, ticket, chip and corrugated.

Ireland is still one of the least industrialized countries in Europe. It generally imports two or three times what it exports.

GREECE

May Build First Pulp Mill In Salonika; Straw Mill Starts

Population: 7,650,000; Per capita paper consumption: 15 lbs.

Paper mills: 6. Board mills: 10.

Pulp mills: None.

Production (short tons) 1954

Paper, paperboard production 30,000

Paper and paperboard imports 20,000

Pulp imports 33,300

Exports of paper, paper boxes 581

Leading paper imports: Newsprint, paperboard

Principal imports from: Sweden, Austria, Finland, Norway, Germany, U.S., Italy.

Principal exports to: Egypt.

There are no pulp mills in Greece although high import duties on paper and high local prices for paper products might be conducive to local interests to build an integrated pulp and paper mill.

Greece's six paper mills and 10 small board mills consume an estimated 30,000 short tons of pulp yearly and one rayon mill uses some 3,300 tons of dissolving pulp. Scandinavia supplied all but 5,769 tons—which came from U. S. A.

A new machine is expected to go into production in one of the leading mills in Patras with rated capacity of some 13,200 tons annually, thus bringing annual pulp requirements to around 33,000 tons in 1955 and 40,700 tons in 1956.

Greek consumption of paper is estimated at around 50,000 tons, of which 15,000 tons are newsprint. No newsprint is made in Greece, and total paper imports of around 20,000 tons include 15,000 tons of newsprint.

Per capita paper consumption in Greece is one of the lowest in Europe, but new mill plans may up the 15 lbs. per person to a higher level. A new strawpulp mill, with an initial capacity of 7,500 tons yearly of bleached pulp, is presumed to have started up in late 1954, at Larissa, Thessaly. U. S. financed \$600,000 for its erection.

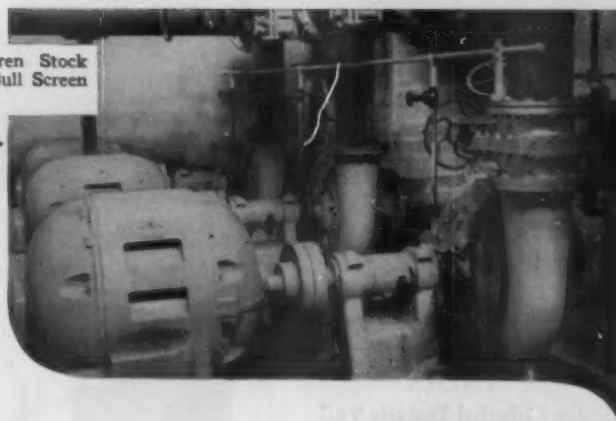
At present a 5,000 ton a year bleached pulp mill is being considered at Salonika using straw as raw material. Negative factors to be considered are availability of water supply and effluent disposal.

GREECE

(in thousands of short tons)

	Paper Produced	Woodpulp Imported
1937.....	34	26
1946.....	13	13
1949.....	32	25
1950.....	38	29
1951.....	43	28
1952.....	36	16
1953.....	24	27
1954.....	30	33

Three Warren Stock Pumps in Bull Screen Room



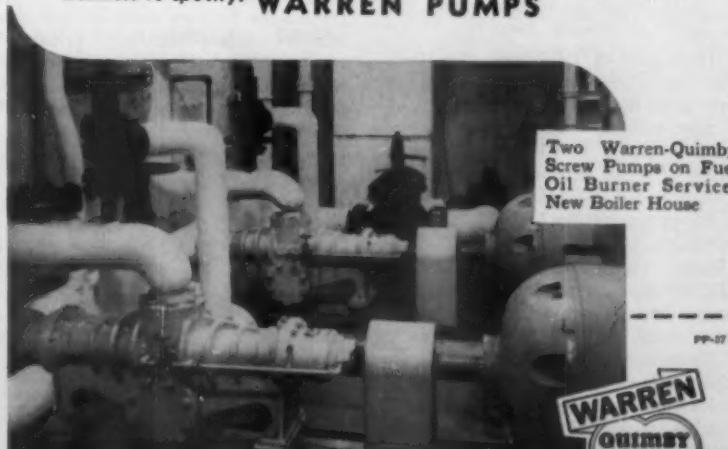
GREAT NORTHERN a Great Name in Papermaking

and great things are happening in East Millinocket, Maine, where the recently expanded mill of Great Northern Paper Company has a present capacity of 1,000 tons of newsprint per day, making them the largest producers of newsprint in the United States.

Among the many additions in facilities is a Chemi-Groundwood Pulp Mill for processing hardwood, the first large-scale commercial plant of its kind.

Recent Warren Pump installations include Stock Pumps in Bull Screen Room, Pressure Pumps to Grinders, Chemi-Groundwood Decker Stock Pumps, Secondary Screen Accepted Stock Pumps; also Fuel Oil Transfer and Burner Pumps in new Boiler House. Other experience-rated Warren Pumps are serving at Great Northern's Millinocket and Madison mills.

For operating economy and long-range dependability, it is good business to specify: **WARREN PUMPS**



Two Warren-Quimby Screw Pumps on Fuel Oil Burner Service, New Boiler House

PP-27



WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC.

Warren, Massachusetts



A S I A

INDIA

Direct Colorful Details Tell How India Built Newsprint Mill

Population: 380,000,000; Per capita paper consumption: 1.9 lbs.

Paper mills: 20

Strawboard mills: 5

Production (short tons)	1954	1953
Paper	173,967	156,468
Groundwood pulp	3,300	3,300
Straw pulp	27,500	26,400
Paper imports	152,578	139,566
Paper exports	3,462	1,820
Woodpulp imports	18,062	14,075

Principal paper grades made: Kraft, Sulfito, Book and Writing, Paperboard.

Principal paper imports from: United Kingdom, Scandinavia, Austria, West Germany

Principal woodpulp imports from: Sweden, Canada.

Principal paper exports to: Burma, Ceylon and Indonesia

India's long, though laborious, strides in pulp and paper production continued throughout 1954, carrying this giant nation closer toward the goal of all dollar-hungry nations—self-sufficiency on the basis of current needs.

Highlights of 1954 were the start-up of India's first newsprint mill, other new mills being planned and hints at a new bamboo pulping process. Direct reports to PULP & PAPER say many of these advancements are due to U.S.A. aid, financial and technical.

Paper production in 1954, up a remarkable 42% from 1950, soared to 173,967 tons. This bettered 1953's 156,468 tons by some 10%. Pulp and paper imports as well as paper exports were on the rise.

Since independence in 1947, India aims seriously at self-sufficiency and eventually looks to a great untapped foreign market at her doorstep. Vast forests, comprising some 20% of India's 1,221,880 sq. mi., have been surveyed toward supplying needed raw material to make India a potential pulp and paper exporter. With further help of U.S. technicians, coniferous forests in the Himalayas, partly inaccessible in the upper altitudes, will be logged.



They Report on India

S. C. LAHARRY (left) Managing Editor, "Indian Pulp & Paper," again sends crisp report on fast moving pulp and paper industry in India.

DR. R. V. BHAT (right), Officer-in-Charge of Cellulose & Paper Branch, Forest Research Institute at Dehra Dun, India, sends a special field report on Indian industry. His group is in midst of \$840,000 research expansion program partly financed by U.S.A.



CEMENT FOR MILL PACKED ON WOMEN'S HEADS—India's first newsprint mill started up in late 1954

after several years of delays and difficulties. According to C. E. Harwick, manager of industrial engineering and design, Ebasco Services, Inc., this project for the new republic, pioneering in industrialization, presented challenging problems, both because it was an initial approach to modern mechanical methods and because of the Indian government's desire to em-

ploy as many people as possible and teach skills to untrained laborers.

Material was transported by bullock-cart, back-packed and even "head-packed" from railroad tracks to the adjacent plant site, says Mr. Harwick, who recently returned from the new mill. More than once, he comments, he saw a woman balance a 93-lb. sack of cement on her head and carry it.

Along the Bombay-Delhi railroad, some 325 miles northeast of Bombay, in a woodland area at Channi in Central India is this new mill, National Newsprint & Paper Mills Ltd. (Nepa.) Costing \$12,000,000, design in New York was under A. P. Schnyder, pulp and paper engineer, R. M. Dickson, mechanical engineer, G. D. Stahl, who handled electrical work with assistance of C. W. Hemming, section chief of industrial design, all of Ebasco.

Nepa is the first such enterprise on the Asian continent and is said to be the only modern one in the world designed to process newsprint commercially from bamboo and salai trees. The mill is in the center of a salai forest at Nepanagar, with some bamboo areas. Raw material for the 100-ton-a-day mill at present is 60% salai groundwood and 40% purchased sulfite pulp. Integrated sulfate mill operations will start late 1955.



Groundwood Mill In India

Here's where groundwood for its first newsprint mill — National Newsprint & Paper Mills Ltd., is made. This is a state-aided industry.

First Newsprint Mill in India

National Newsprint & Paper Mills Ltd., some 325 miles northeast of Bombay, started production in 1954. Furnish is 60% salai groundwood and 40% purchased sulfite pulp. Pusey & Jones 226 in. Fourdrinier, designed for 1500 fpm, is largest on Asia mainland. Mill was designed and built by Ebasco Services, Inc.



PUSEY-JONES MACHINE BIGGEST ON ASIA CONTINENT—The new Pusey & Jones Corp. (Wilmington, Del., U.S.A.) 226-in. newsprint machine, trimming 214 in. and capable of 1500 fpm, is the largest machine on the Asian continent and twice the width of the next largest, with normal speed 4 to 5 times as great.

At present, operating speed is around 1,000 fpm because of the difficulty of training labor and safety hazards. Until the crew is sufficiently trained, the machine is started up and shut down each day; 2 to 3 hours being required for each operation. Mill labor force is 650 on two shifts with around 1,250 forest workers.

Around Nepanagar, an estimated 20 to 25 year supply of salai, including replacement growth, has dwindled after goat herds' pasturing, to 8 to 10 years. This shortage in 10 years may be alleviated by extending bamboo usage.

Completion of this mill is a matter of national pride, and some 50,000 people will attend the formal dedication this Fall with Prime Minister Jawaharlal Nehru. Ceremonies originally scheduled for March 1955, were postponed because of an assassina-

tion attempt against Nehru in Nagpur, 225 miles from the mill.

PRODUCTION REACHES NEW HIGH

By R. V. Bhat
Officer-in-Charge, Cellulose and Paper Branch
Forest Research Institute,
Dehra Dun, India

India's paper production in 1954 reached a new high of 173,967 short tons. But for illegal strikes, total production would have been over 184,700 tons against installed capacity of 190,300 tons. Increased production of 42% compared with 1950 is due to expansion by several mills. Renovation, expansion and development programs are in full swing.

Three projects for new mills are being considered: one for manufacturing writings, printings and wrappings, mainly from bamboo; second for kraft paper or newsprint from coniferous woods from the outer Himalayan regions; and the third for making currency paper.

For the first time in India, regular manufacture of newsprint was realized with the Nepa mill going into production in Jan. 1955. Until its chem-



HERE'S WHERE INDIA'S first newsprint mill is located—at Nepanagar in Madhya Pradesh.

ical mill is completed, this mill will mix imported sulfite pulp with salai groundwood. It will make some 30,000 tons of newsprint yearly when in full production. The government has announced newsprint imports are to be regulated.

At present, the bulk of paper production in Indian paper mills is writings and printings of good quality. One mill intends to make cheaper varieties of such papers by using a portion of groundwood in the furnish. Some mills intend making kraft paper and wrappings in addition to their usual varieties.

Paper has come under an excise duty since March, 1955, handmade paper exempted.

BIG PROGRAM AT FOREST INSTITUTE—Progress has been made in the Rs. 4,000,000 (U.S. approx. \$840,000) reorganization scheme of the Cellulose and Paper Branch, Forest Research Institute, Dehra Dun. The combination Fourdrinier-cylinder mold machine supplied by Sandy Hill Iron & Brass Works, Hudson Falls, N.Y., U.S.A., is being erected. To complete the pilot plant project of this scheme, the U.S. government has sanctioned \$225,000 for machinery and \$25,000 for engineering services under the Technical Cooperation Mission to India. Sandy Hill will supply equipment and engineering.

A new process (Indian patent No. 49054) for manufacturing low grade



U. S. A. Aids India

Expansion program at Paper and Cellulose Research Center, Forest Research Institute at Dehra Dun includes this Sandy Hill Iron & Brass Works, Hudson Falls, N.Y., U.S.A. combination Fourdrinier-cylinder pilot machine. Approximately \$840,000 has been allocated for research and U.S.A. has sanctioned \$250,000 for machinery and engineering under Technical Cooperation Mission to India. Sandy Hill will provide equipment and engineering.

printing papers at low cost from bamboo has been developed at the institute. In this process, parenchyma is separated from the bamboo fibers and the two components are processed separately and then blended for papermaking. Yield is about 60% compared to about 40% when made by the conventional sulfate pulping of the whole bamboo without separation of the parenchyma. This investigation has been financed by the Council of Scientific and Industrial Research, New Delhi.

MANY PLANS FOR EXPANSION

By S. C. Laharry

Managing Editor, "Indian Pulp & Paper" Magazine

In a year of all-around economic progress, the paper mills in India contributed their share of increased production, turning out 173,967 short tons against 156,468 in 1953. This increase would have been greater but for a long stoppage at one of the major mills due to labor unrest. Considering that 1950 production was 121,975 tons, this advance is creditable.

With the exception of the National Newsprint & Paper Mills Ltd., which started production of newsprint, no new units started up in 1954. Newsprint from this mill is reported under trial by some Bombay newspapers. This mill now remains the only paper producing unit in the public sector (state-supported). The other one in Hyderabad has been transferred to private control.

Most Indian paper mills continued their plans of expansion. The Orissa unit, with capital over \$2,200,000 has on order two Yankee paper machines, two digesters, a turbine, a boiler, an evaporator plant and an electrolytic soda chlorine plant. When completed,

these improvements will boost this mill's production by 50%.

The mill in Punjab has raised additional share and debenture capital to nearly \$1,400,000 to expand its production by some 75%.

A mill in Bihar has installed a German Yankee machine for lightweight tissue.

Production at the Hyderabad mill increased by more than 100% with the addition of a second paper machine and beating and cutting equipment. Other new installations included a Kamyrr bleaching plant, a new electrolytic caustic bleach plant, five digesters, two new boilers with a third ready to be installed and a large water clarification plant. This mill's capacity has increased 150% and it plans further expansion. A Swedish groundwood plant has been imported here, enabling experimentation on Indian woods for mechanical pulp.

Expansion of the major Bengal unit which was held up due to strikes and lock-out was resumed in 1954 and fair progress towards increased production is reported from the Mysore and Madras units. (Eds. Note—The Second 5-Year Plan has sanctioned a mill for Papanasam and an additional mill in the Nilgiris in Madras State.)

STATES LEASE TIMBER TO "MIDDLE MEN"—Availability of raw materials has been generally fair, though the present practice of the state governments to lease out bamboo forests and grass lands to middle men doesn't provide for an economical supply of materials to the mills.

Range of production in Indian mills remained more or less unchanged in 1954. It is disappointing to report lack of progress in the manufacture of special grades of paper, and the country still depends upon imports for superior art and bond papers, papers

INDIA—PAPER PRODUCTION

(in short tons)

	1946	1953	1954
Printing,			
Writing	71,390	107,103	115,852
Wrapping	17,257	23,144	27,152
Paperboard	20,446	21,853	25,868
Specialties	7,506	3,830	5,086
TOTAL	116,599	155,930	174,958

INDIA—WOODPULP IMPORTS

(in short tons)

1950	8,565
1952	6,245
1953	13,824
1954	18,062

for printing certificates, blue match paper, tea labels.

Plans have been mentioned by the Uttar Pradesh government occasionally for making newsprint and rayon using conifers in the Himalayas now going to waste in large quantities. Main difficulty is extracting these softwoods from high altitudes.

PAKISTAN

To Build \$20,000,000 New Mill On Ganges River Delta System

Population: 76,000,000; Per capita paper consumption: 2 lbs.

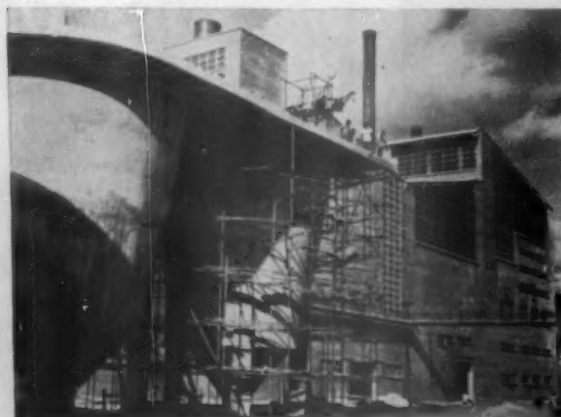
Paper mills: 2

Paper imports (short tons) 1954 1953
15,000 20,000

Principal paper imports from: Sweden, Canada and U. K.

Self-sufficiency in pulp and paper needs with an eye toward eventual exports to near markets is the goal of Pakistan. Pakistan's present needs are low—2 lbs. per person—and no special efforts are being made to increase home consumption.

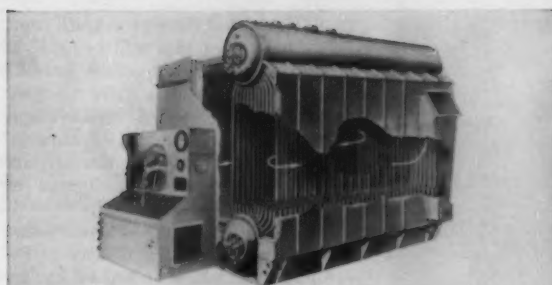
The big news from Pakistan is the recently completed contract between government-owned Pakistan Industrial Development Corp. and Sandwell & Co., Ltd., consulting engineers, of Vancouver, Canada, to design and



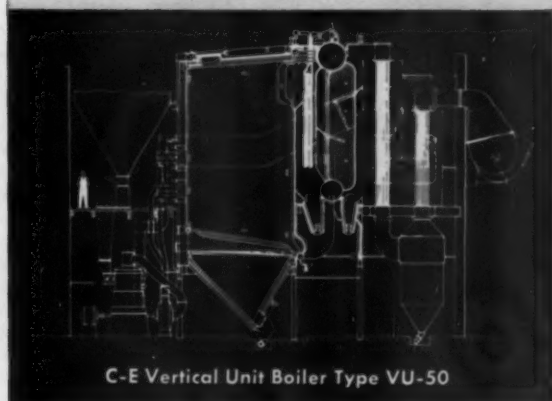
Contrast in Pakistan—Modern Equipment and Manual Labor

Huge modern digesters (left), at Karnaphuli mills in East Pakistan cook bamboo by sulfate process. After processing on three

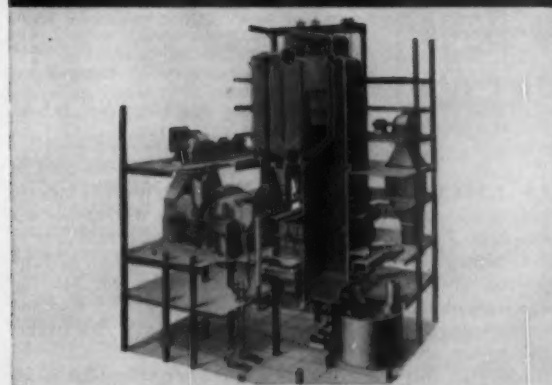
modern paper machines, packaged paper (right), is trundled by natives to Karnaphula River for shipment to West Pakistan.



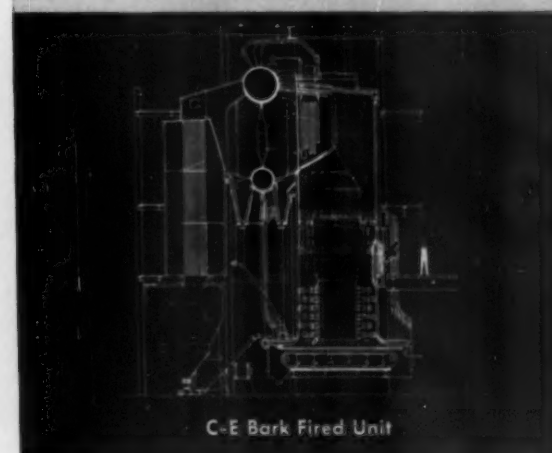
C-E Package Boiler



C-E Vertical Unit Boiler Type VU-50



C-E Recovery Unit



C-E Bark Fired Unit

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The acceptance accorded C-E equipment by the Pulp and Paper Industry is evidenced by the following facts.

- 1.** Since 1945, leading pulp and paper mills have purchased C-E power boilers having an aggregate capacity of more than 11,000,000 lb of steam per hour.
 - 2.** Since 1945, thirteen leading mills have reordered C-E power boilers. In fact, one internationally known paper company placed *seven separate orders*.
 - 3.** Since 1945, more than 80 C-E Chemical Recovery Units have been purchased by pulp mills throughout the world. These include units ranging in capacity from less than 100 tons to the world's largest, having a capacity in excess of 500 tons.
 - 4.** Since 1945, eighteen leading pulp mills have reordered C-E Recovery Units; of this number four mills have reordered twice and one mill three times.
 - 5.** The C-E Bark Burning System, the recent C-E development that has revolutionized bark and hogged wood burning, has already been installed in a score of pulp mills at home and abroad. Performance records show greatly increased efficiency and substantial savings over old fashioned bark burning methods.
- These are but five indications of the widespread acceptance of C-E equipment in the pulp and paper industry. They are five good reasons why, before you buy, you should See C-E.

B-820

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ASIA

PAKISTAN—PAPER IMPORTS

(in short tons)

	Wrap- ping	Print- ing inc.	Writ- ing	Paper- board	All Paper (inc. others)
1950	6,226	8,871	2,477	3,080	23,516
1951	1,618	11,255	2,537	3,497	21,228
1952	2,300	12,000	2,800	4,000	24,411
1953	2,182	6,766	4,000	6,772	20,000
1954	1,800	6,300	3,200	3,500	15,000

supervise construction of a 35,000 ton annual capacity groundwood mill and complete steam-electric power plant. Known as the Khulna project, it will be built on the Ganges River delta system at an approximate cost of \$20,000,000. A \$1,000,000 colony will be built and will include contributions by the company to local schools and mosques.

This mill is part of Pakistan's current rural expansion and industrialization program aimed at raising its living standard and will produce some 23,000 tons of newsprint and 12,000 tons of mechanical printings yearly. Production is expected to start in early 1958.

The operation will employ some 650 people and will be powered by steam generators using coal imported from India.

TO USE TROPICAL WOOD—Gewa, a tropical hardwood, will come from a 1600 sq. mil. region known as the Sunderbans Forest area, some 60 miles from the mill. There the wood will be cut into 4 ft. lengths by local contractors, shipped in barges, and piled unbarked. Shipping costs are expected to be low owing to the mill's proximity to water.

Logs will be barked by conventional drum barkers at the mill, with bark being used as auxiliary fuel. Tests, supervised by Sandwell at Madison, Wis., U.S.A., indicate best pulp furnish at present will be 65% ordinary groundwood, 25% chemi-groundwood



Building Mill in Pakistan

P. R. (DICK) SANDWELL (left), Consulting Engineer of Vancouver, Canada, who has contracted with Pakistan Government to build \$20,000,000 mill at Khulna. PETER J. VAKOMIES (right), Finnish-born engineer with the Sandwell firm, reached Pakistan in May, 1955 to serve as project Engineer. Another Project Engineer there is his associate, DON WYNESS.

and 10% long fiber chemical pulp.

The mill will have two Fourdriniers, wire width 146 in., one for newsprint and the other for mechanical printings.

Arriving from Canada in May were Peter Vakomies and Don Wyness, Sandwell & Co. project engineers, to investigate the site, water supply, etc.

In 1952 Pakistan used around 9,000 short tons. By 1962 according to present estimates, this will increase to about 25,000 tons. In addition, printing paper consumption is on the rise and by 1962 is expected to top 15,000 tons yearly.

KARNAPHULI MILLS LARGEST

—Several miles to the east of the new mill site are the Karnaphuli Paper Mills, Pakistan's largest, which recently went into production of machine finish and supercalendered printings, cream laid writings, ledger, bonds, kraft, brown wrapping and certain qualities of cards. Most of this production is going to the more heavily populated West Pakistan.

The Karnaphuli mills are ideally situated at Chandraghona on the banks of the Karnaphuli River and have a production aim of 100 tons

daily, using bamboo in a kraft process. Capacity of this mill is rated at 30,000 tons yearly, present production however is from 1500 to 2000 tons a month. Actual requirements of Pakistan, according to Pakistan Industrial Development Corp., are 25,000 tons; surplus production of 5,000 tons will be exported.

This mill has three Walmsley machines, two Fourdriniers and a 14-cylinder machine. Two are said to be high speed for writings and printings and the third for machine glazed kraft.

JAPAN

Drastic Deflationary Measures Turn New Output Records Sour

Population: 87,003,000; Per capita paper consumption: 46.8 lbs.

Paper mills: 557, including 12 straw and vegetable fiber pulp mills

Pulp mills: 338

Production (short tons) 1954 1953

Paper 2,118,711 1,941,663

Chemical woodpulp 1,142,002 1,028,973

Mechanical woodpulp 648,893 623,790

Straw or vegetable

pulp 8,131 9,113

Paper imports 3,555 14,575

Paper exports 64,600 19,540

Woodpulp imports 125,988 134,307

Principal paper grades made: All kinds

Principal woodpulp imports from: North America, Scandinavian countries

Principal paper exports to: Hong Kong, India, Australia

Principal paper imports from: U.S.A., Sweden, West Germany

Consumer buying resistance was a cold dash-in-the-face reward to Japan's pulp and paper makers who racked up a second straight record breaking production year. Price reductions, averaging \$20 a ton for pulp and \$10 for paper, were required to move high inventories from mills, says T. M. Iwata, C. T. Takahashi & Co., Inc.

Japan's business economy for 1954 was seen by observers as suffering from government efforts to combat post-war inflation trends with deflationary tools.

Notwithstanding, Japanese industry experts predict a good 1955 as the re-



Helps Break Records Again

One of Japan's 338 pulp mills which helped roll up a second straight production record in 1954 with 1,799,000 tons—Nichi-

nan mill of Nippon Pulp Industry Co., Ltd., one of largest pulp producers in Japan.

sult of many adjustments made by the industry, according to Y. Mikasa, secretary, Kokoku Rayon & Pulp Co.

Japan's pulp and paper industry continues the phenomenal recovery reported in PULP & PAPER's Review last year. This industry, at the end of World War II, was badly damaged or dismantled and largely converted to strategic materials manufacture. But now it has more than completely recovered. In four short years, pulp production has soared from 763,890 tons in 1950 to 1,790,895 in 1954, an increase of about 125%.

This is remarkable, considering that pre-war Japan obtained 60% of her pulp from the Sakhalin Islands, Korea and Formosa (Taiwan) and all the modern mills were in those territories. At the end of the Pacific war, Japan had a capacity of 653,560 tons of pulp. The Korean conflict, coupled with relaxation of controls, and increased domestic raw materials spurred the industry to erect new mills which, combined with rebuilt machinery, new equipment and improved pulping processes, brought the industry up to its pre-war numerical strength, and a production capacity increase of nearly 300%.

FORESTS OVERCUT—Forests are one of Japan's few natural resources, occupying some 68% of total area. There are about 6,000 million cu. ft. of coniferous timber available. One potential danger, underlined in an Allied Military Command report just before the end of occupation, stressed that forestry in Japan has followed a pattern of self-destruction for many years. Rate of consumption, about 2,150 million bd. ft. in 1953 well exceeds the maximum estimate of new

JAPAN—PULP PRODUCTION

In Thousands of Short Tons

	Sulfite (Rayon)	Sulfite (Paper)	Sulfite (Other)	Soda Chem.	Gr'd Wood	Total
1938	113	444	69	3	419	1,050
1941	326	481	84	117	463	1,410
1949	50	188	33	8	314	595
1950	111	230	64	34	386	824
1951	190	304	100	85	516	1,195
1952	205	398	158	58	849	1,566
1953	248	484	247	39	1,024	1,662
1954	297	470	317	50	1,134	1,799*

* Also includes 16,000 tons of semi-chemical.

JAPAN—PAPER PRODUCTION, IMPORTS, EXPORTS, CONSUMPTION

(In thousands of short tons;
except per capita figures in lbs.)

	Pro- duced	Imports	Exports	Consumed Total	Capita
1937	1,600	70	135	1,535	43
1946	231	—	2	229	6
1949	695	12	6	701	17
1950	962	0.1	22	941	23
1951	1,286	1	48	1,239	29
1952	1,479	9	17	1,472	34
1953	1,942	14	19	1,929	44
1954	2,119	4	65	2,058	47

(1937 and 1946 were high and low record years prior to the recent peaks).

Source: Ministry of International Trade & Industry.

PULP & PAPER—1955 Review Number



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Below Fuji—Forest Research

At foot of majestic Mt. Fujiyama is this 10-acre nursery where 1,800,000 fast growing red pines are part of intensive Japanese industry research for new sources of pulp.



Mechanization Comes To Japan

Mobile crane in Sanyo Mill woodyard, swings bundle of pulpwood logs from storage into log pond where swarm of workers move wood to barking drums.

growth of about 824 million.

Over-cutting to meet current requirements ignored the long-range effects which will seriously impair future output. This explains the persistent efforts of Japanese interests to obtain pulpwood and chips from the U. S. Pacific Northwest and Soviet timber from the Sakhalin Islands as well as their activity in Alaska. Sakhalin pulpwood has proven too expensive after trial shipments.

VAST ASIA MARKET—Japan is poised on the brink of the world's greatest undeveloped pulp and paper market, Asia, where 800,000,000 people use only 5 lbs. per person yearly. Japan is beginning to make inroads into one of these markets, India. Proving a formidable competitor in a market which has been largely Scandinavian and more recently, Austrian, Japanese mills have taken advantage of full bookings in these mills to step in with substantially lower prices and promises of prompt deliveries.

Today Japan has 338 woodpulp mills and some 537 paper mills. Some 220 integrated mills have an installed

capacity exceeding 2,000,000 tons.

Domestic demand jumped per capita consumption to 46.8 lbs. in 1954. It had dropped from 23 lbs. in 1937 to 8.8 in 1947.

Direct from Japan, from K. Miyahara, chief of the pulp section of the Goshō Company, Ltd., comes this report:

JAPAN BATTLES INFLATION

By K. Miyahara,
Chief of Pulp Section, Goshō Co., Ltd.

For all Japanese industries, 1954 has been a year opening and closing in a deep depression caused by a deflation policy. In retrospect, however, it will be a year imprinting deep footmarks on the course of recovery of post-war Japanese economy.

In spite of these difficulties, the industry achieved successively new records in pulp and paper production, 8% and 9%, respectively, more than in 1953. But returns were disappointing: Largely increased inventories toward late 1954 and serious price reductions. Manufacturers' inventories also set a

new but unhappy record.

Such large inventories were not caused by decreased consumption, but by the tightness of money owing to the government's deflation policy.

MUCH RAYON PULP IMPORTED—

There were heavy dissolving pulp imports in early 1954. There were new records of viscose filament and staple fiber production, accompanied by increased consumption.

Increased inventories naturally caused price reductions: 10% on dissolving pulp, 20% on papermaking sulfite, 30% on sulfate and 10% to 20% on various paper grades. If consumers wanted to import more foreign pulp, they could have done so in 1954 at less cost than domestic pulp.

As the writer looks back upon the last time (1950-1951) when pulp seemed to have wings and was quite difficult to buy even at twice the present price, he is struck with the severe changes of the times in these few years.

Nonetheless, in such dark circumstances as these, there were some bright spots. Semi-chemical pulp, which was in bud at the end of 1953, came into full production in 1954 in several mills and production jumped to about 16,000 tons, about 30 times that of 1953. It is expected to develop more steadily in 1955 to about 60,000 tons on an annual basis. Sulfite pulp production in 1954 was about 5% higher than in 1953, papermaking pulps 3% less, and dissolving about 20% more. Sulfate increased 28%. Of sulfate pulps, bleached pulp increased 40% vs. 24% unbleached.

Increased sulfate and semi-chemical production means more utilization of hardwoods and this tendency will develop more rapidly year by year. Merits of these pulps have become more fully recognized, and this will ease the pulpwood situation.

TYPHOON DOWNS MANY TREES

—One large typhoon last Autumn brought down about 7.5 million cords of trees in Hokkaido District, the equivalent of three years' supply of wood from this district. Until this happened, the price of pulpwood was in an upward spiral but results of the disaster favored consumers in that district and also in the mainland. The downed timber is available only for efficient, quick deliveries with caution taken to prevent insect infestation and rot.

Fund allocations for dissolving pulp imports for 1955 were for less than 44,000 tons, compared with 88,000 tons in 1954. On the other hand, demand for paper is expected to increase day by day.

Lowered inventories, felt in the

paper industry first, will next affect the pulp industry. We seem to have already reached rock-bottom of the depression and the industry expects only a bright horizon from now on.

ISRAEL

First Mill Already Expands; Box Plant Puts Tin to Rout

Population: 1,800,000; Per capita paper consumption: 9 lbs.

Paper mills: 2

Paper Production:	1954	1953
Paper	8,250	550
Paper imports	11,000	16,500

Principal paper grades made: Newsprint, kraft, sulfite, book and writing

Pulp and paper imports from: Finland, Norway and Sweden

Israel's two mills, one a paper mill and the other a corrugated box factory, are busily expanding. Here are two reports on these mills specially prepared for PULP & PAPER:

From M. Goldberg, administrative manager of American Israeli Paper Mills, Ltd., Hadera, Israel:

"The American Israeli Mills; founded by investors in the U. S., Latin America, Australia and Europe and headed by Joseph M. Mazer, treasurer, Hudson Pulp & Paper Corp., of N. Y., is now in its second year of operation.

"Paper production for this young mill has risen from 500 tons in 1952 and 1953, to 7500 tons in 1954. Some 4500 tons produced in first quarter of 1955 hint at a record year.

"Rated capacity of this mill was originally 40 tons daily, based on an estimated Israeli consumption of some 12,000 tons yearly of writing and printing papers, multi-wall kraft and other kraft and sulfite papers. Actually annual consumption in these grades is nearer to 15,000 tons.



Israel Needs More Pulp

Woodpulp from Finland, Norway and Sweden awaits processing in American Israeli Paper Mills Ltd., Hadera. This mill plus corrugated box plant at Carga are saving the young nation millions of dollars of foreign exchange yearly. See special reports on this page.



Paper Replaces Tin Cans in Tel-Aviv

Growing demands for more and better packaging in young Israel's cities, such as this modern Tel-Aviv, have spurred the nation's two mills towards greater expansion.

"To meet this increased demand, the Israeli mill has stepped up its production to better than 50 tons daily. The installation of additional stock preparation equipment, expected to be completed in July, 1955, will increase daily production to 75 tons.

"The employment of locally trained operating personnel has been successful. Overseas supervisory personnel will be needed for some time. Robert W. Zion, an operating executive from Hudson Pulp & Paper Co., U.S.A., is general manager and has been in Israel since the first stage of construction. (This mill has a 136 in. Bertrams Fourdrinier machine with Sandy Hill headbox, Morden Stock-Makeup, Dilts Hydrapulper and E. D. Jones screens, Burke Morden, president of Morden machines, made a flying visit in 1954).

"Expansion plans include the addition of a second paper machine for papers under 50 grams per sq. meter. Grades on this paper will be citrus wrap, manifold, toilet paper, paper napkins and lightweight papers.

"The Israeli mill is already financially in the black after only 15

months operations and on Mar. 31, 1955, paid its first interim dividend for the first quarter of 1955."

HOW NEW CARGAL MILL IS FAR-ING—From S. Dubiner, partner, Cargal Co., manufacturers of corrugated cardboard and containers, comes this report:

"The new corrugated box factory of Cargal Co., with a corrugator for A and B flute, of 160 cm. width and production capacity of up to 330 fpm, has been put into production. We also have complete facilities for making tapes for our own use, automatic tapping machines, high speed printer-slotter, die-cutting facilities, complete equipment for handling single-face materials, etc.

"This factory has taken care of all requirements of Israel, in addition to exporting to Cyprus, Greece, Turkey, Ethiopia and other countries within economic shipping distances.

"Several new paper products have been created by the Cargal Co. Of particular interest is a box for packing citrus fruit, with a unique construction originated by this company. It has passed tests with flying colors—250,000 have been shipped to European countries.

"The factory will shortly be increased from 35,000 sq. ft. to 60,000 sq. ft.

"The opening of this factory has provided Israel with a cheap, modern packaging material and has made possible important savings to exporters of industrial and agricultural products. This type of packaging saves millions of dollars of foreign exchange for Israel each year.

"Cargal is the first Asian enterprise to be admitted as a member of the F.E.F.C.O. (Federation Europeenne des Fabricants de Carton Ondule). Production and quality of Cargal products are considered equal to the

highest standards required in the industry.

"The company is now planning the erection of an aluminum foil and rolling plant, which it will combine with its board operations. It will serve a large market for packaging of biscuits, etc., now being packed in tin cans."

TURKEY

Plans 150% Increase in Output Of Three Sumerbank Mills

Population: 22,500,000; Per capita paper consumption: 5.7 lbs.

Paper mills: 3 Woodpulp mills: 3

Strawpulp mills: 2

Production (sh. tons)

Paper 1954 1953

Chemical woodpulp 42,020 30,000

Mechanical woodpulp 13,090 11,440

Straw & other pulp 14,850 9,790

Paper imports 2,090 1,980

Woodpulp imports 22,440 31,570

Woodpulp imports 3,300 2,200

Principal paper grades made: All kinds

Principal paper imports from: Finland,

Sweden, Poland

Principal pulp imports from: Sweden

Continuous expansion characterizes Turkey's 20-year "young" pulp and paper industry with its three integrated mills.

• Over 70 correspondents from nearly 50 nations and territories sent exclusive, on-the-spot reports to PULP & PAPER for this World Review.

As recently as 1953 a third mill was added to bring production to 42,000 short tons and already this fast-growing industry contemplates a 150% increase in 1955 to bring production up to 110,000 tons. This is the substance of a special report sent to PULP & PAPER by Selahattin Akyol and Fahir Siparhi of Sumerbank General Directorate.

Turkey's three integrated mills, Sumerbank's Paper and Pulp Industries Establishment, is a subsidiary of the Sumerbank organization, which is associated with some 39 large scale Turkish plants in various industries.

From the American Foreign Operations Administration, Turkey received \$89,000 in mid-1955 for pulp and paper products.

Sumerbank's paper mill No. 1 began production in Nov. 1936 with two paper machines trimming 87 in., each, one of which is a combined paper and board machine. This mill produces some 25 tons in 24 hours of writing and printing papers as well as wrappings. It also has a converting and printing plant for envelopes, printed

TURKEY—PAPER & PULP

	(in thousands of short tons)			Imports
	Paper	Chem. Pulp	Production (not available)	
1949	18.4	10	8	2
1951	23.2	12	9	3
1952	30.0	12	10	2
1953	32.6	12	14.8	3
1954	42	13		

and unprinted paper bags, ruled papers, cardboard boxes and railroad tickets. Its printing office started up in 1944 and has seven printing machines and one automatic compositor.

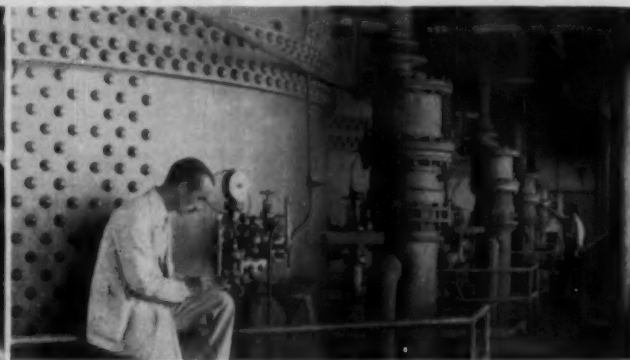
Paper mill No. 2 started up in 1944 with three machines, two trimming 112 in. and one 68 in. The latter is a cigaret machine rated at two to five tons daily. One 112 in. is a newsprint machine and the other a regular printing paper machine and output of both machines combined is between 30 and 40 tons a day. A Yankee dryer has been added to this latter machine for making some 7 to 16 tons a day of lightweight and glazed wrappings for oranges, other fruit, and for glassware.

VARIED OUTPUT IN NO. 3 MILL
—Paper mill No. 3 represents the con-



Corn Stalks Are Cut

Corn stalks are ground in this cutting mill in Turkey before processing into pulp at one of three integrated mills.



Then They are Cooked

Here are four of five digesters in Turkey's mill No. 2 which has a yearly production of 14,300 short tons.



This Machine Makes Tissue

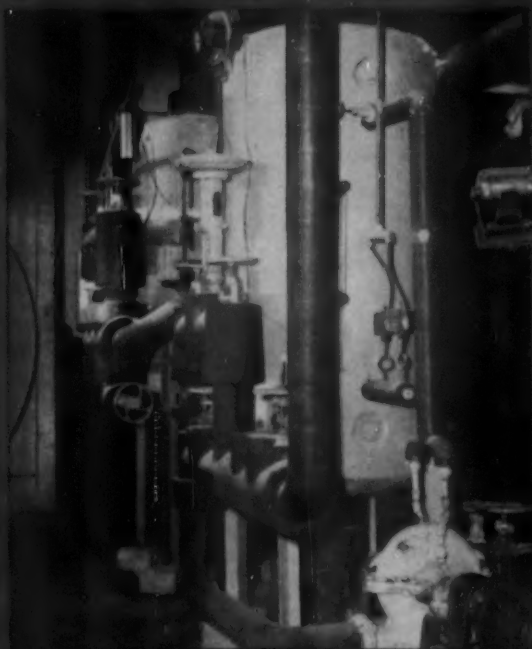
New Yankee dryer in Turkey's Sumerbank Mill No. 2 was recently added on No. 5 machine trimming 112 in. It produces 7 to 16 tons a day of lightweight tissue and also glazed fruit wrap.



And Other Papers Are Made Here

This is one of seven paper machines in Turkey which have boosted production to 42,000 tons yearly.

GIVE YOUR DRYER SECTION A BREAK



Recently installed Fulton system on big fast Fourdrinier at the South.



Smaller Fulton systems rapidly being installed on older and on smaller machines.

Fulton Dryer Drainage systems have been installed on practically every paper machine built in the past ten or fifteen years. Go back a little further and include older and smaller machines, and the total adds to some 900 installations.

Why are FDD systems in such general use—what do they do to rate such widespread acceptance?

- Automatic control of drying operation
- Proper gradation of temperatures
- Substantially faster drying
- More uniform drying close across the sheet
- Less broke—far less waste
- Less shrinkage, cockling, curling or hardening regardless of grade

If yours is one of the comparatively few dryer sections still handicapped for lack of Fulton Dryer Drainage, get in touch with us at once. Give your dryer section a break.

ROSS MIDWEST FULTON CORP.

DAYTON, OHIO

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ASIA

tinuing expansion of the company and began operations in 1953. It has a combined paperboard machine trims 112 in. with an output of 25 to 45 tons a day. A strawboard machine produces 20 to 30 tons a day.

Production of these machines is for a corrugated machine, a box making machine and bag machines. Boxes so produced are cheaper than wood, but are said to be strong and more economic, freight-wise. They are salvaged for re-use.

Multi-wall bags for cement, chemicals, etc., are replacing hemp and jute.

Turkey's three mills employ some 2500 workers of which 250 are women.

TAIWAN

U.S.A. Builds Mills, Enlarges Others, in Free China's Island

Population: 8,749,151; Per capita paper consumption: 13.2 lbs.

Paper mills: 31; Woodpulp mills: 1

Straw or vegetable fiber mills: Rice-straw 5; Bagasse, 1; Bamboo, 4; Miscellaneous, 2

Production (short tons)	1954	1953
Paper (incl. board)	47,604	38,488
Bagasse & other pulp	18,536	16,315
Paper imports	10,033	2,896
Paper exports	106	28
Woodpulp imports	13,478	6,955
Bagasse pulp exports	3,700	2,276

Principal paper grades made: Newsprint, Kraft, Sulfite, Paperboard

Principal paper imports from: Sweden, U.S.A., Canada

Principal woodpulp imports from: Canada, Sweden

Principal paper exports to: Hongkong

Principal bagasse pulp exports to: Japan

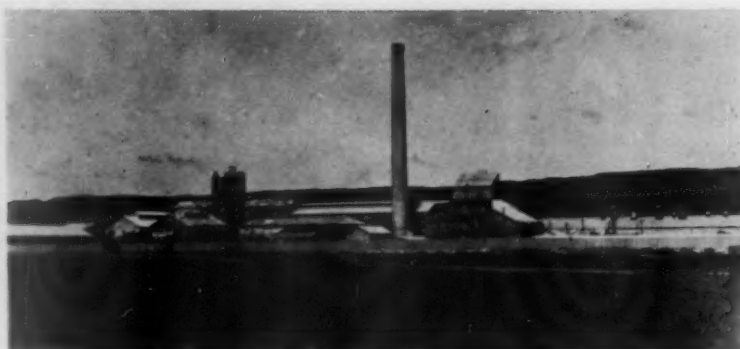
Increased production continues to characterize the paper industry on Taiwan (Free China), called Formosa, meaning "beautiful," by native residents, thanks to U.S.A. assistance.

Bamboo forests totaling 116,137 acres, produce 400,000 to 500,000 tons annually.

Here follow two special reports written for PULP & PAPER:—

By Li Li, Manager,
Taiwan Trading Corp., Taipei, Taiwan

The Taiwan Pulp & Paper Corp. was sold by the Chinese government to private owners in March, 1955. This paper company has been a government-owned and most profitable establishment. The sale to private



A Taiwan Mill—Processes Bamboo

Tatu Paper Mill of Taiwan Pulp & Paper Corp. pulps bamboo for its own use, employing low acid magnesium bisulfite cooking process.

TAIWAN—PAPER PRODUCTION (in short tons)

	Paper	Board
1947	9,761	4,388
1948	14,163	4,477
1950	15,296	3,879
1951	18,038	5,511
1952	28,503	6,291
1953	31,829	6,659
1954	39,270	8,334

hands, mostly farm owners, is a move to implement the government's land reform program as well as encourage private capital in industries.

Kraft pulp is in good demand in Taiwan while imports of paper bags has been strictly prohibited by the government.

The U.S. Government's FOA, China Mission, is contemplating more financial assistance to the industry and is considering various projects to increase the number of mills in Taiwan.

There is one pulp mill, the Hsing-ying Mill, making pulp from sugar cane bagasse. Another makes woodpulp which is converted into paper in the same mill. No market woodpulp is produced.

By Ni-Hung Chang, Chemical Engr.,
Taiwan Pulp & Paper Corp.,
Taipei, Taiwan.

Most outstanding event for Free China's pulp and paper industry is



Now a Private Enterprise

K. H. YU (left), former Chief Engineer, Taiwan Pulp & Paper Corp., is newly elected President of this concern, previously owned by the government, now a private enterprise. M. K. YEW (right), a prominent social worker, has been elected Chairman of the Board.

probably the transfer of the government-owned Taiwan Pulp & Paper Corp. into a private enterprise. TPPC, the biggest pulp and paper manufacturer in this country, owns three paper mills, one board mill and one pulp mill, Hsingying Pulp Mill, the largest bagasse pulp mill in the world.

M. K. Yew, a prominent social worker, has been elected chairman of the new board of directors; Dr. H. Y. Chao, former President, has been elected executive director, while K. H. Yu, former chief engineer, has been appointed president.

TPPC increased its paper production from 18,310 short tons in 1953 to 21,148 tons in 1954, an increase of about 15.5%. Board production rose 6.3% from 6,674 tons in 1953 to 7,095 tons in 1954. Pulps produced were 18,536 tons in 1954 over 13,130 tons in 1953, an increase of some 41%.

U.S. aid programs for modernization of TPPC's Lotung paper mill and process conversion for their Hsingying pulp mill, from sodium sulfite to kraft pulping of bagasse, are well underway and are expected to be completed in 1956. Newsprint production in the former will be increased some 12,000 tons yearly, while the latter's will rise to between 24,000 and 30,000 tons of kraft bagasse pulp yearly. TPPC has also accomplished the conversion of a paper machine into a board machine at its Tatu Paper Mill.

HONG KONG

Brisk Trading With Red China; Many Countries Ship in Paper

Population: 2,500,000; Per capita paper consumption: 35 lbs.

	1954	1953
Paper Imports	73,373	34,806
Paper Exports	29,087	8,822

Principal papers exports to: South Korea, Taiwan, Indonesia, China

A report with interesting observations on colonial Hong Kong has been specially prepared for PULP &

Pulpwood...chips...chemicals...rolls here's ONE source for ALL handling needs



The new gigantic \$60,000,000 newsprint and pulp mills of Bowaters Southern Paper Corporation, Calhoun, Tennessee, uses Link-Belt gantry cranes, log feeders and stackers, turntable machinery, chain conveyors for delivering logs to grinders, belt tripper, apron conveyor and bucket elevator for limestone, disc screen and power transmission machinery.

Depend on LINK-BELT for a single component or complete system

Modern pulp and paper mills use Link-Belt equipment in scores of materials handling applications. Dependable conveyors, feeders, elevators, and vibrating screens provide smooth, uninterrupted flow of logs, chips, pulp and paper . . . handle fuel, chemicals and waste. And wherever dependable power transmission is required, mills rely on Link-Belt drives to supply it.

No matter what you need in conveying and power transmission machinery, you're sure to find it in the complete Link-Belt line. We'll design, equip and erect the entire materials handling installation . . . and accept full responsibility for its successful operation.

Take advantage of the experience and service that Link-Belt offers. Engineering specialists are conveniently located in sales offices throughout the country. Call the one nearest you and learn how Link-Belt equipment and engineering can increase the efficiency of your materials handling operations.



*One source . . . One responsibility for Materials
Handling and Power Transmission Machinery*

TYPICAL LINK-BELT EQUIPMENT SERVING THE PULP AND PAPER INDUSTRY



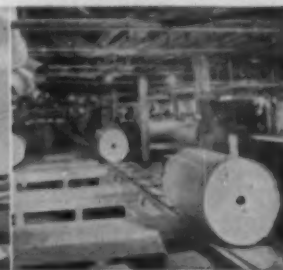
In woodyards, logs are conveyed to storage or direct to barkers by either Link-Belt chain or belt conveyors.



Link-Belt conveyors, feeders, vibrating screens handle and classify large volumes of a wide variety of bulk materials efficiently.



For coal and bulk chemicals, you get the right mechanical handling equipment from the complete Link-Belt line.



Link-Belt conveyors and drives coordinate the movement of heavy rolls of paper from machine to final shipment.

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



THIS IS BRITAIN'S Crown Colony of Hong Kong, 90 miles south of Canton, which imported 73,373 tons of paper in 1954, exported 29,087. At far right is American passenger and cargo ship.

PAPER by Anker B. Henningsen of Anker B. Henningsen Federal Inc., U.S.A. of Hong Kong:

"This British Crown Colony, besides being beautiful and interesting, is one of the finest run cities in the world. The British deserve tremendous credit for their excellent civil administration and efficient police system.

"When one sees Japan, Taiwan, the Philippines, French Indo-China, Indonesia and Siam receiving millions in economic and military aid and compares these countries and their cities with well-run, efficient Hong Kong, one wonders, 'What price Colonialism?'"

"There are no pulp or paper mills in Hong Kong and we therefore can give only some idea of the paper trade during 1954. Newsprint imports mostly from Canada, Norway, Eastern Europe and U.S. were 21,659 tons; exports mostly to South Korea were 8,784 tons. Other printing and wrapping papers in rolls and sheets, from Japan, Austria, U.K., and Norway amounted to 10,375 tons, while exports of 5,369 tons went to South Korea, Thailand, Formosa and Macao.

"Common packing and wrapping paper from Sweden, Austria, Japan and Eastern Europe totaled 10,186 tons, with exports of 3,438 tons to South Korea, Indonesia, Formosa and Thailand. Paper and paperboard, not

otherwise specified, were imported from China (excluding Formosa), Japan and West Germany and totaled 14,067 tons while 8,579 tons were exported to Malaya, Thailand, Indonesia, South Korea and Indo-China. Plain strawboard imports from Japan and the Netherlands were 8,218 tons, with 1,448 tons in exports going to Indonesia and Thailand.

PHILIPPINES

Two Mills Add New Facilities; Bamboo Will Be Used For Kraft

Population: 21,643,600; *Per capita paper consumption:* 10 lbs.

Paper mills: 1

Chipboard mills: 2; *other fiber mills:* 1

Production

(short tons)	1954	1953
Paper & paperboard	10,600	6,888
Bagasse pulp	5,020	4,770
Woodpulp imports	1,485	1,100
Paper imports		
(value)	\$12,657,000	\$14,722,000
Woodpulp imports		
(value)	\$150,000	\$103,000

Principle grades made: Kraft papers, book and writing, paperboard.

Principal paper imports from: U.S., Canada.

Principal pulp imports from: Sweden, U.S., Canada.

The Philippine industry has many obstacles to hurdle. Foremost, is the

lack of local suitable raw material. The only raw material so far harvested economically is bagasse. This nation of 115,600 sq. mi. and 21,643,000 people has only one paper mill and two chipboard mills.

PLANS FOR NEW MILLS—Several projects, however, are reported underway. At Davao, two chemical pulp mills are in the planning stage. Abaca waste is being considered for one 20,000-ton capacity mill and hardwood sawmill waste for a 33,000-ton mill.

In the southern island of Mindanao, a 27,500-ton groundwood mill for producing 20,000 tons of newsprint from hardwood waste is under consideration. Auxiliary facilities would add 16,500 tons of kraft liner board and wrapping paper and 12,500 tons of writing and printing papers.

The Soriano mining and lumber interests are reported behind this project. Estimated costs are \$25,000,000.

Another project calls for a 49,500 ton paper and board mill at Manila using locally produced pulp.

George A. Adamson, technical director of Philippine Paper Mills, Manila, is working out plans for a new 75-ton sulfate pulp addition for his company, using bamboo as raw material. Equipment will come from the U.S. and European makers.

REPORTS FROM COMPANY HEADS—M. Rivers, general manager, Compania de Celulosa de Filipinas reports:

"Aside from paperboard, our company is the only one manufacturing paper in commercial quantity. Our mill at Bais uses cane bagasse to make bleached pulp and paper. Our production in 1954 was increased to 5,593 tons of bond and writing paper."

THE PHILIPPINES—IMPORTS

	(In short tons)		
	Newsprint	Fine & Book Paper	All Papers and Woodpulp
1947	19,278	1,463	
1949	30,151	2,564	58,796
1950	24,842	4,646	61,552
1951	32,046	9,812	71,400
1952	16,146	10,561	58,982
1953	24,679	8,733	51,000
1954	27,000	10,000	60,000



Paper Serves Novel Purpose

An unusual use for paper found in the Philippines are these paper strips decorating streets during Fiesta or Feast Day of the patron saint.



ALEXANDER A. ADAMSON (left), President and General Mgr., and **GEORGE A. ADAMSON** (right), Technical Director, of Philippines Paper Mills, Ltd., who are directing plans for a new bamboo-base sulfate process 75-ton pulp mill. Mr. George Adamson recently toured U.S.A. and Europe in search of equipment. His offices are in Los Angeles, U.S.A. Their company makes chipboard, fiberboard, combination board.

From president Adamson, of Philippine Paper Mills, comes this report: "Our situation in pulp and paper for the past year remains practically the same, with the exception of the startup of the Worldwide Paper Mill producing chipboard. No figures of production are available yet, nor pictures of the paper machine, which was imported from Japan.

"The paper mill at the Cebu Portland Cement Co. shut down last year and the company will probably sell the antiquated paper mill.

"There is a new project under construction for the production of wrapping paper from imported pulp—Manila Paper Mill. Capacity will be 25 tons a day, starting at the end of 1955. I believe the Fourdrinier machine will be imported from Japan.

"Regarding our operation during 1954, we broke all previous records of production with well over 5,000 tons. We put up two new Smith and Winchester wetlap machines and are regularly manufacturing shank, countershank board and leatherboard, averaging 12 tons a day. These items are used by our local shoe industry.

"Prices on all paperboards have been considerably reduced due to overproduction and we are now looking for export markets.

RED CHINA

Most Paper Is Made Near Shanghai By Small Size Mills

Population: 601,000,000; Per capita paper consumption: 1.6 lbs.

Production (short tons)	1954
Paper and board	Up to 500,000
Paper imports	61,000 (1952)
Newsprint imports	25,000 (1952)
Principal paper and pulp imports from:	
Russia, Sweden, Finland, Norway, Poland	
Principal paper exports to: Ceylon	

In Communist China, increased production has been squeezed out of



12,000 pounds on a 35-pound Signode Addison-Semmes pallet!

Here—from Signode—is another way to cut shipping costs which has proved successful in hundreds of plants. It's the use of Signode Addison-Semmes expendable fibreboard pallets.

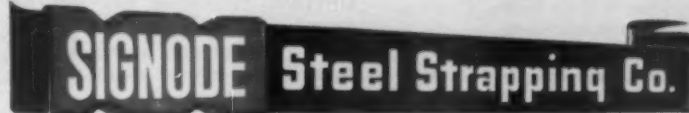
These pallets save money because they're lighter. For example, each pallet in the picture above weighs 35 pounds. Each holds a 4,000-pound load. Each replaces a skid weighing 150 pounds—a weight saving of 115 pounds per unit, or 2300 pounds per carload, in this case. At a freight rate of \$1.00 per cwt., this saves \$23.00 per car on freight alone.

Your customer benefits, too. The pallets are easier to handle with their 4-way entry. They take up less warehouse space, empty or loaded. And they're easy to dispose of—can be sold as waste paper.

Signode Addison-Semmes expendable fibreboard pallets have many other advantages. They are available in sizes and weights your shipments require. Send for the facts today.

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Signode Addison-Semmes expendable pallets will continue to be made by the former Addison-Semmes licensees—a selected, nationwide group of fibreboard container manufacturers.



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existing mills by a maximum output of handmade paper mills and by renovating some mills.

The dominant papermaking center in China is in and around Shanghai. Here, before World War II, a few small mills comprised the major portion of the paper industry of China, making barely one-third of domestic needs. Japan, U.S.A. and Europe supplied the rest.

The latest population census is 601,000,000, 137,500,000 people more than the 1948 census. China proper extends some 2,279,134 sq. mi. Forests cover some 310,888 sq. mi., or 6%, of which only 116,494 sq. mi. are accessible. Great tracts of untouched forests in the interior of China include spruce, fir, larch and pine. There are plenty of raw material resources and today in some areas extensive use is made of bamboo and bagasse. China has used bamboo for many centuries and today bamboo is now used in a large scale at mills in Shanghai and in the province of Fukien.

The ambitious industrial and cultural development announced by the Communist Chinese government suggests her importance as a market for pulp will increase in the next 10 years.

Production of paper in China is variously estimated at amounts from half that amount up to 500,000 short tons. In 1952 about 61,000 tons were imported, but imports are variable.

Newsprint consumption was about 99,000 tons, possibly some imported from U.S.S.R. (U.N. estimates that by 1960 to 1962, consumption will reach 550,000 short tons, of which newsprint will be near 200,000 tons).

Construction of a new paper mill was reported in 1954 in Northwest China at Kiamusze. Considerable expansion of existing Kwantung paper mills also has taken place. The latter is expected, in addition to a goodly newsprint expansion, to produce 11,000 tons of chemical market pulp for other Chinese mills by 1956.

China, however, is aware of export possibilities and it is reported that the possibility of future newsprint supplies from China was recently raised in London. It is interesting to conjecture whether this export might follow the return of Communist Chinese engineers, who are said to be going to India to study the manufacture of pulp and paper.

Gen. Yuan Chung Hsien, Communist Chinese ambassador to India, said the visit of the engineers was arranged by the Indian government in cooperation with Indian paper mills. Reports to PULP & PAPER from India emphasize how much aid, financial and technical, has been given by the U.S. to India's paper industry.

REST OF ASIA

Bamboo, Tropical Hardwoods May be Basis for New Mills

Indonesia—Pop.: 76,500,000. Per capita use of paper: 3.5 lbs. Production: 7,000 tons.

Thailand—Pop.: 19,000,000. Per capita use of paper: 2.2 lbs. Production: 3,000 tons.

Cambodia—Laos-Viet-Nam—Pop.: 30,000,000. Per capita use of paper: 2 lbs. Production: was 4,000 tons, now destroyed.

Ceylon—Pop.: 8,105,000. Per capita use of paper: 3.7 lbs. Production: 1,000 tons.

Burma—Pop.: 18,859,000. Per capita use of paper: 1.5 lbs. Production: 1,000 tons.

Other Asiatic countries—Pop.: about 200,000,000 more. Per capita use: 5 lbs. to less than 2 lbs.

Greatly underdeveloped, but self-conscious of their tremendous and growing stature in the community of nations, the 35-odd countries not described separately in this section on Asia comprise an approximate 160,000,000 peoples, whose per capita consumption of paper is among the world's lowest.

United Nations representatives and technicians have stirred up a virtual hornet's nest of ambition, interest and growing activity in setting up native paper industries. Accessible forests in these countries cover an average of 11.7%, or some 639,420 sq. mi. Cutting practices, on the average, are 25% good, 50% fair and 25% poor or destructive according to the U.N.

Indonesia, Burma, Thailand and Viet-Nam are among the top ranking in forest areas with 255,725 sq. mi., 96,700 sq. mi., 60,675 sq. mi., and 45,139 sq. mi. respectively.

BURMA—Construction is presumed begun by the Burmese government on a new 100-ton a day bamboo mill, reported in this section last year.

According to Harold R. Murdock, former research director of Champion Paper & Fibre Co., plentiful bamboo near the mill site at Akyak in Rangoon would be pulped by the sulfate process, and exports were expected to be around 18,000 tons yearly. A Chicago engineering firm was working on this.

CEYLON—Production has probably started on a paper mill, but it is not known what process or raw material is being used or what grades of paper are being produced.

INDONESIA—76,500,000 people use about 3.5 lbs. per person and present paper consumption is estimated at

around 150,000 short tons, of which newsprint is about 20,000 tons, writing and printing papers 50,000 tons. There are two small mills using rice straw as raw material in addition to some 3,000 tons of imported pulp. Production is about 7,000 tons yearly of high quality writing and printing papers. Several possibilities for economic paper mills operations have been studied.

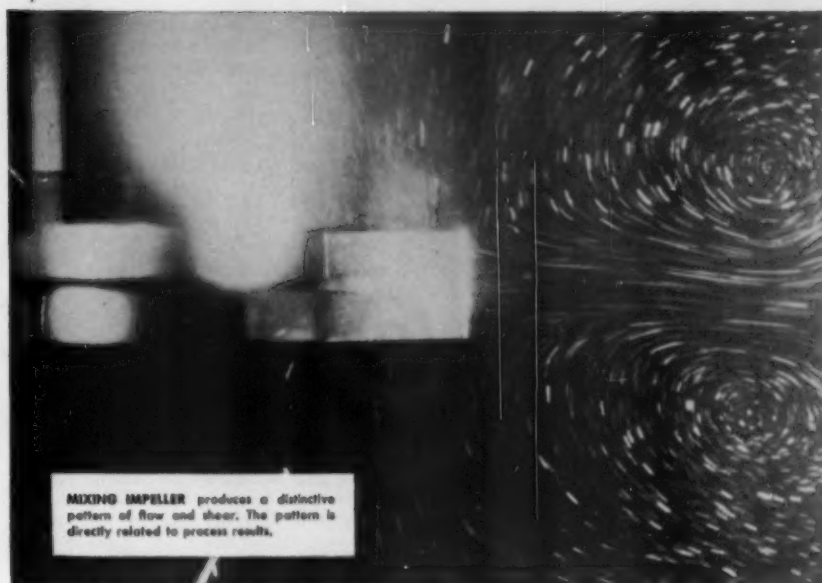
Abundant Indonesian forests would be the preferred source for these mills as bamboo, although plentiful, is channeled principally into building products. Two-thirds of Indonesian forests are tropical rain forests of mixed hardwoods. There are also fast growing conifers which offer good pulp prospects.

THAILAND—Its forests, 77% of the total area, contain considerable untouched stands. The native population of 19,000,000 consumes only 20,000 tons; about 2.2 lbs. per person. Paper is 90% imported. Two government owned paper mills have a combined capacity of around 3,000 tons annually. One very small mill in the Samsen area of Bangkok produces 1 ton a day of printing papers from wastepaper. Near the Burma border about 75 miles west of Bangkok, at Kanburi, is the main paper mill, which began production in 1938 with rated capacity of 10 tons a day. This mill may double capacity, using bamboo.

CAMBODIA-LAOS-VIET-NAM—Per capita paper consumption in the free states of Cambodia, Laos and Viet-Nam for an estimated 30,000,000 people, is about 2 lbs. per person. About 30,000 tons of paper and paper products were imported. Domestic production is mostly a small quantity of handmade papers. Newsprint consumption is around 15,000 tons, kraft 3,000 tons, writing and printing papers, 7,500, and the rest is cardboard and other papers.

The only industrial capacity for producing pulp and paper was in North Viet-Nam but was destroyed in 1945. About 4,000 tons of bamboo pulp in the mill at Vietri was sent to a paper mill at Dap-Cau where it was blended with imported mechanical pulp to produce 5,500 tons of paper. Forests cover about 51% of the three states.

IRAQ—There are no real pulp or paper mills at present for the 5,200,000 people of Iraq. Forests are practically devoid, covering only 3.5% of total land area and only 2% are accessible. Per capita paper consumption is 2.2 lbs. from the 6,000 tons of paper and paper products imported.



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How do you make it work for you? That's the \$64 question. It involves knowing just how big to make the impeller, for optimum fluid flow in the vessel; just how fast to rotate it, for the right degree of turbulence. And how to get both with the least power input.

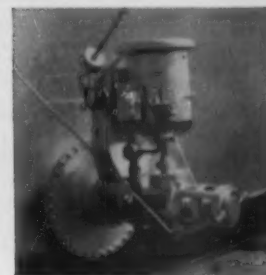
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MIXING EQUIPMENT Co., Inc., 141-g Mt. Read Blvd., Rochester 11, N. Y.
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LATIN AMERICA

BRAZIL

Expansion Potentials are Great; Pulp Imports Nearly Double

Population: 57,350,000; Per capita paper consumption: 19 lbs.
Paper mills: 41. Pulp mills: 16

Production (short tons) 1954 1953

Paper	379,000	330,000
Chemical woodpulp	91,000	81,000
Groundwood	110,000	110,000
Paper Imports	135,000	123,000
Woodpulp Imports	196,238	107,000

Principal pulp imports from: Finland, Sweden, Canada, U.S.A.

The emergence of pulp and paper as a major industry in Brazil is highlighted in reports to PULP & PAPER from this the world's fourth largest country. Mergers, increased capital investments and new mills plans dominated the year, along with inflation and lowered coffee sales.

Brazil has the largest forest area outside of U.S.S.R. Its total land area of some 3,288,050 sq. miles is 56.7% forest covered; a total of 1,854,232 sq. mi. Only an estimated 463,405 sq. mi. are accessible or 14.2%. A small 6% or 115,876 sq. mi. are in use.

Brazil is a fast expanding industrial nation and while per capita paper consumption has kept pace with industrial growth, the home paper industry has been bursting at its plant-seams to keep abreast. At present low consumption levels, however, Brazil is almost self-sufficient in its paper needs, except for newsprint, which is 70% imported. Pulp imports comprise around 45% of domestic needs, and they climbed from 107,000 to 196,000 in 1954.

Non-integrated operations, anti-



BRAZIL—PULP IMPORTS

(in short tons)

	Bleached Sulfite	Unbleached Sulfite	Bleached Kraft	Unbleached Kraft	Rayon	Groundwood	Total
1953							
Sweden	25,682	12,458	16,665	26,371	16,507	79	97,763
Finland	4,531	7,272	—	1,973	2,976	—	16,783
Norway	886	—	—	—	—	—	886
U.S.A.	602	—	—	157	417	—	1,176
Canada	—	—	—	—	191	—	191
Total	31,701	19,730	16,665	28,502	20,093	79	116,769
Percent	27.15%	16.90%	14.27%	24.41%	17.21%	0.06%	100%
1954							
Sweden	22,471	17,542	16,156	23,247	15,631	232	95,279
Finland	9,657	29,494	—	14,917	—	7,024	61,119
Norway	6,344	719	445	451	137	—	8,097
U.S.A.	3,302	—	2,976	8,880	4,895	1,279	21,331
Canada	8,693	132	439	123	2,015	—	11,402
Total	50,467	47,888	20,015	47,618	22,679	8,535	197,200
Percent	25.59%	24.28%	10.15%	24.15%	11.50%	4.33%	100%

quated equipment and lack of technical personnel are major deterrents to efficiency and economy of the Brazilian industry. But reports to PULP & PAPER stress a renewed financial interest on the part of local investors in mills.

Papermaking in Brazil is a highly profitable operation, in spite of inefficiency of many operations.

As to the outlook in 1955, Brazil's imports will depend largely on the amount of foreign exchange she obtains from her exports.

It is possible that Brazil's forests of pine and eucalyptus, and its cane bagasse, could eventually support an industry with three to four times present production capacity of some 286,000 short tons, and switch Brazil from an importer to an exporter of pulp and paper.

Klabin-Lafer, Brazil's largest industrial organization, has increased the capital of its Parana mill from \$12,500,000 to \$25,000,000 and is dou-

bling capacity to 100,000 tons of printing paper.

Copase (Companhia Paulista de Celulose) plans a \$10,000,000 sulfate pulp and paper mill at Rio Clare in the state of Sao Paulo, using abundant eucalyptus nearby. Equipment for the 15,000-ton mill will be supplied by Parsons & Whittemore, Inc.,

BRAZIL—PAPER—PULP

(in thousands of short tons)

	Paper			
	Produced		Imports	
1938	117		55	
1947	188		93	
1949	220		58	
1950	275		75	
1951	269		58	
1952	313		60	
1953	330		123	
1954	379		135	
	Woodpulp			
	Produced		Imports	
	Chemi-cal	Ground-wood	Chemi-cal	Ground-wood
1950	50	44	145	12
1951	80	110	143	0
1952	80	110	110	0
1953	81	110	107	0
1954	91	110	188	8.5

Head American Subsidiary in Brazil

Directing operations at West Virginia Pulp & Paper Co.'s subsidiary, Rigesa S.A. at Valinhos, Sao Paulo, are (l to r) MARJEN H. (BUD) COLLET, President, FERNANDO RIBEIRO, Director, and JOHN WHEELER, Technical Director. Mr. Collet was formerly Forester in U.S.A. for the American company, and Mr. Wheeler was an executive at one of its Southern U.S.A. mills.

New York. The paper mill of Itajai has started construction of another mill in southern Brazil to increase its pulp production.

Industrias de Papel Simao, S.A., in Sao Paulo, plans sulfate pulp production from eucalyptus.

DR. L. RYS REPORTS MANY PLANS

—In a special report to PULP & PAPER, Dr. L. Rys, general manager, Industrias Klabin de Parana de Celulose, S.A., says that there are many mill projects in Brazil which are more or less on paper only, because it is difficult to get necessary dollars and import licenses for machinery.

In a good-humored shot he says, "As you very well know, the financial situation of Brazil is not very good, because Americans don't drink enough Brazilian coffee."

The new bagasse pulp and paper mill, Fabrica de Celulose e Papel "Piracicaba" has completed its final and third step of going into full production. This is the startup of its new Bagley & Sewall 40-ton a day capacity machine, supplied by Castle & Overton, Inc.

This new mill using the Pomilio-Celdecor process for bagasse is the fulfillment of a long-cherished dream by the Morganti family, well-known sugar producers in Brazil, to make their Usina Monte Alegre of the Refinador Paulista organization into a complete agricultural-industrial unit based on sugar cane.

REPORT ON WEST VIRGINIA'S MILL—M. H. (Bud) Collet, president of Rigesa, S.A., West Virginia Pulp & Paper Co.'s subsidiary operations at Valinhos, some 55 miles northwest of Sao Paulo sends this special report to PULP & PAPER:

"Our products are quality corrugated shipping containers, specialty boxes and gummed closure tapes. We are one of the four principal suppliers of corrugated containers in Brazil, the others being J. Cost & Riberio, Klabin, and Matarazzo. Each is considered a large and financially sound enterprise. Rigesa at present produces bagasse pulp by a caustic soda process, importing kraft pulp and making all paper we use in manufacturing boxes in our new modern container converting plant. Our operating and sales personnel are all Brazilians, except for three Americans, John D. Wheeler, technical director, Harrison Hull, an accountant from our New York office here temporarily, and myself.

"Average monthly Brazilian imports of all types of woodpulp for the first four months of 1955 were 9,924,335 short tons; a decline of 30% from average monthly imports of 142,879 tons during the same period in 1954."



Air View of West Virginia's Subsidiary Mill in Brazil

BAGASSE PULP by caustic soda process is blended with imported kraft pulp in this mill of Rigesa, S.A., at Valinhos, 55 miles from Sao Paulo. Products are quality corrugated shipping containers, specialty boxes, etc. It is a subsidiary of West Virginia Pulp & Paper Co., one of leading American companies.

CHILE

Big Plans for Using Pine; Two Mills Rising in South

Population: 6,000,000; Per capita paper consumption: 22 lbs.

Paper mills: 3. Paperboard mills: 22

Production (short tons)	1954	1953
Paper	57,187	52,500
Mechanical woodpulp	20,833	18,200
Straw pulp	3,575	4,800
Newsprint imports	13,845	14,600
Other paper imports	33,535	1,600

Principal pulp imports from: Sweden, Finland, U.S., Canada

Principal paper imports from: U.S., Sweden, Canada

Two previous forest surveys augmented by the just-published FAO report, report two possibilities in Chile for setting up integrated pulp and paper operations. The better bet is Chile's vast 250,000 hectares of Insignis pine, which reportedly could produce by 1965 all raw material needs for 750,000 tons of chemical pulp or 1,240,000 tons of mechanical pulp. Investments of some \$250,000,000 to \$300,000,000 would be needed, with 90% being foreign currency.

Interesting is that this pine is not a native to Chile but to Western U.S.A., where it is known as Monterey pine. Plantations were started in 1916 in Chile and the pine has thrived in its adopted country far better than its native land.

Present growth of Insignis pine however, because of thinnings going for fiberboard, posts and small dimen-

sional lumber, provide a limited supply of timber for pulp needs.

The second possibility for a pulp industry is based on the natural forests of Valdivia, which reportedly could support a 250,000-ton chemical pulp expansion or 420,000 tons semi-chemical pulp.

Chile's largest pulp and paper producer, Cia. Manufacturera de Papeles y Cartones S.A., produces almost 100% of all pulp and paper products. As early as 1927, it has used Insignis pine in the manufacture of groundwood and at present has two groundwood mills using this pine. Its mill at Puente Alto, near Santiago, where main operations are located, has a capacity of some 17,000 tons of groundwood a year, and the mill at Valdivia, which started up in 1952, produces about 2,000 tons a year.

Chile has three paper mills and some 22 small paperboard mills. Annual consumption is 70,000 tons of paper and board, including 17,000 tons of newsprint. Domestic production takes care of 46% of newsprint consumption, about 95% of other grades.

BUILDING TWO MILLS—Backed by a \$20,000,000 loan from the Interna-

CHILE—PULP PRODUCTION

(in thousands of short tons)		
	Mechanical Pulp	Straw Pulp
1949	14.3	6.0
1950	16.9	4.9
1951	17.1	5.2
1952	19.0	4.1
1953	16.2	4.8
1954	20.8	3.6

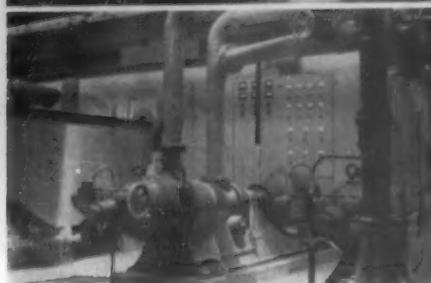
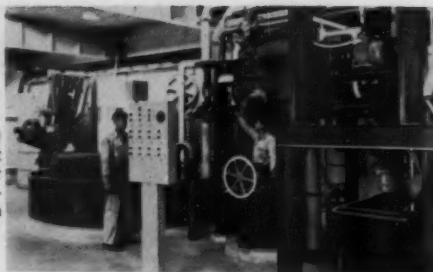
CHILE—PRODUCTION IMPORTS, CONSUMPTION

(in thousands of short tons)					
	Production		Imports		Total Consumption
	Newsprint	Other Papers	Newsprint	Other Papers	
1949	9.	37.7	15.4	3.3	65.5
1950	12.1	34.7	21.5	1.7	70.1
1951	12.1	36.3	14.0	1.8	64.4
1952	12.8	36.1	11.0	1.8	61.8
1953	10.3	42.1	14.6	1.6	68.7
1954	13.6	43.7	12.7	1.1	72.8



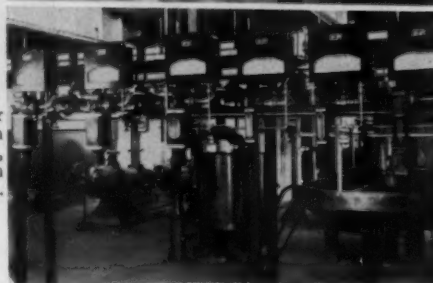
(Left) New 62-in. Bruderhaus machine, described as most modern cylinder machine in Mexico, with Goldsmith vat flow systems.

(Right) Shartle Bros. (U.S.A.) Hydropulper and Ragger at left with Fischer & Porter Ratio Controller and continuous weighing device in middle.



(Left) E. E. Jones & Sons (U.S.A.) Stock Master with Accru-Set Control of plug.

(Right) Fischer & Porter Flowrators for additive such as starch, size, color, alum, clay, etc., made by Mexican subsidiary of this U.S.A. firm.



SPECIAL TO PULP & PAPER—PICTURES OF NEW EQUIPMENT IN MEXICO

These are recent additions in Cartonera Moderna, S.A.

tional Bank for Reconstruction and Development, Cia. Manufacturera de Paleles y Cartones is now building two mills in Southern Chile near Concepcion. An integrated groundwood and newsprint mill producing 40,000 tons and 44,000 tons respectively will be ready in late-1955.

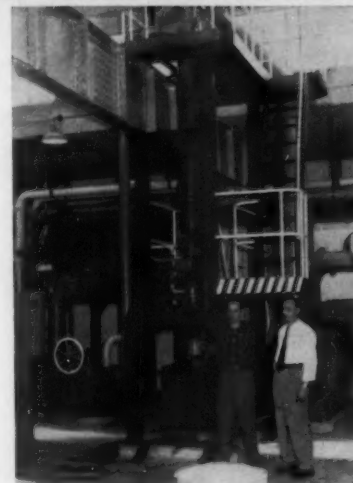
This mill will be at San Pedro near the Bio-Bio river. A kraft mill, at Laja, will also start up in late 1956, making 47,250 tons of kraft pulp and 10,500 tons of kraft papers. Both mills will use Insignis pine.

Most mills are running again at full capacity. Controls have tightened on paper imports, with the result that demand for domestic paper has risen.

CELULOSA DE CHIHUAHUA, S.A.—Construction of this new mill in Chihuahua state was proceeding at a rapid pace, and it was expected to be in production during the second half of 1955. Personnel is being engaged for supervisory positions. This mill aims to make high alpha and dissolving pulps for sale and is 50% government-financed. Snia Viscosa, Italian dissolving pulp-rayon firm, is engineering it.

FABRICA DE CELULOSA "EL PILAR," S.A.—This new 30-ton bagasse pulp mill at Ayotla started trial runs in late December 1954. It started with straw, slowly increasing the proportion of cane bagasse, and now uses 100% bagasse, making a fine fully bleached pulp. It is owned by the Coyoacan Mills and uses the Umberto Pomilio (Argentine) continuous caustic soda and bleaching process.

CARTONERA MODERNA, S.A.—This mill started up its new 62-in. No. 3 machine, the most modern cylinder machine in Mexico. It also has a new stock preparation system for fine board manufacture. Capacity is 46 tons a day at maximum 200 fpm. Fischer & Porter provided an elaborate automatic control system. Shartle Hydrapulper, Classifier and Selectrap, two E. D. Jones & Sons Stock-Masters and Jones Fibre-Master, all with Accru-Set controls, a Moore & White Duplex cutter and Cameron winder were U.S.A.-made installations. The machine was built by



Beside a 10 in. Nicholas Vortrap stands Felix Ribot, Jr. (left), Asst. Gen. Mgr., and Nino Marcelli, Chief Engineer.

Maschinenfabrik Zum Bruderhaus, Reutlingen, Germany. It uses the Goldsmith (Phil Goldsmith, Dominion Engineering, Canada) direct and counter-flow vat systems. Felix Ribot Sr. is general mgr. of Cartonera Moderna. Nino Marcelli, chief engineer, was responsible for design and erection.

ASERRADEROS GONZALES UGARTE, S.A.—Plans for the groundwood and newsprint mill planned by this 40-year-old lumber company are in finishing stages and Jorge R. Roldán, head of its pulp and paper dept., was in Europe in mid-1955 in connection with the project.

CIA. INDUSTRIAL DE ATENQUIQUE, S.A.—This 120-ton kraft pulp and paper and board mill in Jalisco province, which PULP & PAPER's editor visited and described so completely in its May 1948 issue,

MEXICO

Here's Complete On-the-Spot Story of All Mexican Expansion

Population: 28,000,000. Per capita paper consumption: 17.3 lbs.

Paper and board mills: 29. Pulp mills: chemical wood, 3; groundwood, 6; straw or other fiber, 3.

Production

(in short tons)	1954	1953
Paper and paperboard	207,000	201,000
Chemical woodpulp	58,000	54,000
Groundwood	35,000	38,000
Straw, other fiber	3,000	.....
Imports—paper, board	34,000	40,000
Imports—woodpulp	44,000	54,000

Principal paper grades made: Kraft and sulfate papers, book and writing, board. Principal paper imports from: U.S.A., Canada, Finland.

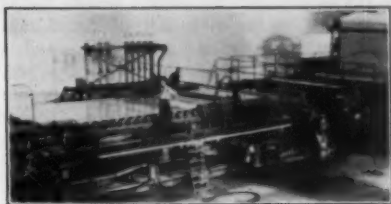
Principal pulp imports from: U.S.A., Sweden, Finland, Canada.

By Carlos Garcia Robles
Pulp-Paper Mill Consulting Engineer
and Manufacturer's Representative,
Mexico City

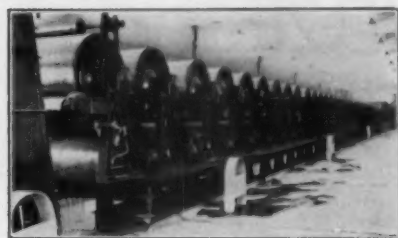
New mills continue to be built, and older mills have installed, or are planning to install, new machines.



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Highly successful fourdrinier now in operation in Austria, making printing papers.



Dryer section on complete board machine in Mexico.



Fourdrinier for making bond and printing papers, operating in the United States.

SANDY HILL paper and board machines, some of them in continuous operation for nearly fifty years, are still giving conspicuously satisfactory service in mills throughout the United States. To-day the satisfaction of American producers with Sandy Hill's complete line of equipment is being duplicated in Central and South America and in many countries across the sea.

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Sandy Hill's engineering staff has been conspicuously successful in meeting the minds and solving the problems of operators in countries outside the United States and Canada as well. Our experience, counsel and facilities are constantly at your service.



Semi-commercial machine for India. Small enough for development work; large enough for commercial use.



Baled bagasse in storage at Paramonga.

Sugar cane bagasse has been used successfully and profitably as a source for papermaking fibre since 1938 by W. H. Grace & Co., through its subsidiary, Sociedad Agrícola Paramonga, Ltd., at Paramonga, Peru.

The Sandy Hill Iron & Brass Works is exclusively licensed to design and build machinery for the commercial conversion of bagasse to paper by the Grace Company's secret formula.

Similar services, from mill planning to production and initial operation, are available for the processing of other suitable types of fibre.

Sandy Hill's Brochure of Pulp and Paper Making Machinery is available on request.



Associated with Canadian Vickers, Ltd., Montreal; Builders of Sandy Hill Designed Machinery in Canada

has increased output by installing one new digester. It has plans for adding to its power plant and doubling capacity. Jose Angel Cenicerros is general director and Felipe Cenicerros is general manager.

CIA. INDUSTRIAL DE SAN CRISTOBAL, S.A.—A new mill, managed by two brothers, Dante S. and Enrico Cusi, is producing about 40 short tons of bagasse pulp by the mechano-chemical process developed by Dr. E. C. Lathrop and the late S. I. Aronovsky of the Peoria, Ill., U.S.A., fibrous residues laboratory. Some features were devised by the Cusi brothers. Some of the product is consumed at the mill for wrapping and semi-fine papers.

EL FENIX PAPER CO.—This Mexico City mill, which put in a Ross Engineering hood and systems last year, is contemplating further modernization with a new stock preparation system and new wet end for



FELIX RIBOT SR. (left), General Mgr. of Mexico's growing mills, Cartenera Moderna, S.A., which has installed what is called the modern cylinder machine in that country.

SR. CARLOS GARCIA ROBLES (right), Pulp-Paper Engineer of Mexico City, who again writes the report on his country for PULP & PAPER.

Fourdrinier machine. (Editor's note—Sr. Garcia Robles himself had an active engineering role in building this mill a few years ago.)

PRODUCTORA DE PAPEL, S.A.



—This post-war built mill, engineering and equipment from Sandy Hill Iron & Brass Works, Hudson Falls, N.Y., U.S.A., is completing installation of its new No. 2 Fourdrinier machine, to be producing by the end of 1955. It will produce fine grade and M.G. papers, about 40 short tons per day. This company had been only in lumber business until after the late 1940's.

EMPAQUES DE CARTON "TITAN" S.A.—This mill in Monterrey is a subsidiary of the second biggest brewery in the Western World—Cuauhtema Brewery, which ranks after Anheuser-Busch of St. Louis, Mo., U.S.A. It has been granted a loan of \$800,000 which, it is reported, will be invested in new Fourdrinier machine. Only as recently as 1952 it started up a new Sandy Hill (U.S.A.-built) 82-in. board machine. This company pioneered corrugating board in Mexico, needing containers for the beer (the brewery also owns its own

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LATIN AMERICA

hide glue, gum, bottle cap, glass and other plants) but now it has converting plants with Langston corrugators in Mexico City and Guadalajara. It uses bamboo, straw, even knapf (called cañamo) for raw material. Jesus E. Zambrano is president of the paperboard subsidiary.

LABORATORIOS NACIONALES DE FOMENTO INDUSTRIAL—This is a semi-official autonomous body which completed a research pulp pilot plant, offering services on a non-profit basis to the industry. It is headed by Rafael Rojas, managing director, and Mario Jaimes, technical advisor.

NEWSPRINT MILL AT MICHOCAN—The Bank of America, San Francisco, is said to be financing this mill. It is to make 100 tons a day, using pine and fir.

NEWSPRINT MILL AT OAXACA—This one, also 100 tons, is financed by Mexican, United States and Canadian capital.

(Eds. note—Still the biggest mills in Mexico are San Rafael and subsidiaries, headed by Jose de la Macorra, and Loreto and Pena Pobre mills, headed by the Lenz family. Two San Rafael mills are rated at 225 tons a day of paper of many grades. They also make sulfite, kraft, groundwood and semi-chemical pulps. The two

Lenz mills make 100 tons of mostly fine papers, also groundwood and kraft pulp. Their latest major addition was a Rice Barton (U.S.A.) Fourdrinier. The Coyoacan groundwood and paper mills make 40 tons a day of paper.

(Joel Ferry is manager at Sonoco de Mexico (U.S.A.-owned); Mitchell Thom, former British Columbia supt., is mgr. at United Shoe & Leather Co.'s board mill, and E. Skoglund, ex-Washington state and Scandinavian papermaker, is supt. at Coyoacan.)

CUBA

To Announce New Process Mill

Population: 5,500,000. Per capita paper consumption: 57 lbs.

Paper Mills: 2

	(Short tons)
Paper production	37,300
Paper imports	102,181
Chemical pulp imports	22,000
Dissolving pulp imports	8,800

There are two paper mills in Cuba with capacity of about 50,000 tons, but its high consumption rate for a Latin American country and vast resources of sugar-cane bagasse has long been considered as good reason for establishment of an integrated industry.

Last year in this section, PULP & PAPER reported on the plan for a bagasse mill, primarily for newsprint, being studied by the Cuban government. Reliable but unofficial sources have revealed to PULP & PAPER recently that the Cuban government will momentarily make an announcement of this mill, using a hitherto unused process.

Cuba's two paper mills, both in Havana, are Papelera Cubana and Papelera Moderna, which produce almost every grade of paper except newsprint. The one rayon producing mill in Cuba is La Compania Rayonera Cubana S.A., which is presently considering possibility of using cane bagasse to produce purified cellulose. J. de la Roza, of New York and Havana, inventor of a continuous cooking process bearing his name, maintains that purified cellulose from bagasse shows high qualities.

A Cuban mill using this process for alpha cellulose in 1927 abandoned this project in 1938 because of financial difficulties. Preliminary work to use his process also in Mexico was never carried through.

CUBA—CONSUMPTION

	(Short tons)
Newsprint (all imported)	30,800
Writing and printing	12,100
Wrapping papers	36,300
Paperboard	33,000
Others	27,800

ARGENTINA

Self-Sufficiency Is Still Its Goal—But Not by Year 1957

Population: 19,000,000; Per capita paper consumption: 44 lbs.

Paper mills: 30; Woodpulp mills: 5

Production (short tons)	1954	1953
Paper	251,511	191,925
Chemical woodpulp	43,689	33,421
Mechanical woodpulp	14,274	9,968
Paper imports	70,770	37,281
Woodpulp imports	186,797	92,169

Principal paper imports from: Finland, Sweden

Principal woodpulp imports from: Finland, Sweden

Self-sufficiency in pulp and paper is the goal of Argentina's second Five Year plan ending in 1957. Revisions, however, have had to be made in this plan, because self-sufficiency isn't attained overnight, as the Argentines have discovered. What effect the June revolt might have on this program, as well as others, remained to be seen. Eight or ten more pulp mills are projected.

UMBERTO POMILIO, founder of Celulosa Argentina, and inventor of the continuous caustic soda and pulping-bleaching process for bagasse, other vegetable fibers. Another POMILIO - PROCESS mill, one of many around world, has been built in Mexico.



Argentine's per capita consumption, which tops all other South America countries, took a sharp dip as woodpulp and newsprint imports were curtailed by the Peron government. Argentine's estimated 172,970,000 acres of forests, of which some 148,200,000 are said to be accessible, are not yet capable of supporting domestic production.

Woodpulp imports dropped to a critical low of 39,173 short tons in 1953 but took an abrupt upturn to 186,797 tons in 1954. Newsprint imports, which had climbed to a high of 117,082 tons in 1951 but dipped to 30,776 tons in 1953, rose to 54,241 tons in 1954.

A pulp and paper survey indicates some 385,000 cords of pulpwood from home forests were used in 1954. Here follows a report especially written for PULP & PAPER:

By Julio Cesar Lera,
Vice President, Francisco Lera Co.
(Financial House), Buenos Aires.

Throughout 1954, government officials and industry representatives have

MEXICO—PAPER CONSUMED

(in thousands of short tons)

	Printing* (no news)	Writing & Fine & Wrap	Coarse & Tissue	Paper Board	Total (Include others)
1948	20	23	39	7	165
1949	19	27	60	8	171
1950	23	32	75	12	209
1951	29	36	78	16	226
1952	29	33	76	13	230
1953	30	35	70	18	240
1954	28	38	80	22	240

* Mexico has imported about 60,000 tons of newsprint annually in recent years.

MEXICO—PAPER PRODUCED

(in thousands of short tons)

	Printing* (no news)	Writing & Fine & Wrap	Coarse & Tissue	Paper Board	Total (Include others)
1947	17	20	54	4	138
1948	18	23	58	5	156
1949	22	25	52	4	150
1950	27	35	77	13	217
1951	25	30	70	2	198
1952	26	31	75	0	201
1953	23	33	78	2	207

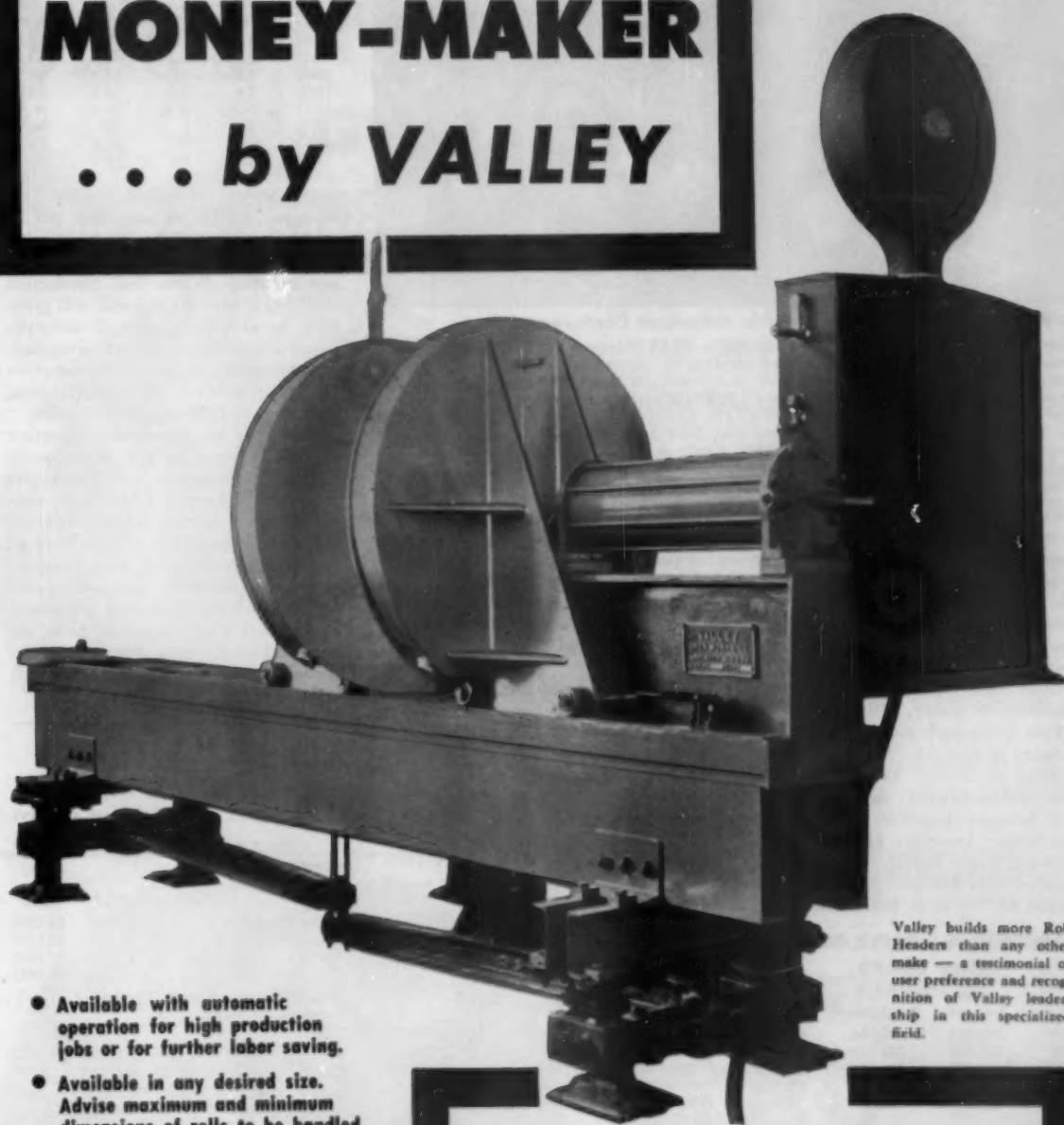
* There is no newsprint made in Mexico.

MEXICO—WOODPULP

(in short tons)

	Produced	Imported
1937	18,656	
1946	27,010	
1947	56,314	
1948	78,880	32,933
1949	71,500	45,000
1950	77,000	56,500
1951	64,000	56,000
1952	60,000	60,000
1953	62,000	54,000
1954	66,000	44,000

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A PULP & PAPER Picture of Latin American Conference

This hitherto unpublished picture shows some of 89 delegates from North and South America and Europe, at UN-sponsored meeting of experts in Buenos Aires, called to discuss projects to meet rising demands of 160,000,000 Latin Americans for pulp and paper. Left to right, on dais: EGON GLESINGER, Deputy Director, Forestry Div., FAO of UN, Rome, Italy; ARNE SUNDELIN, also of FAO, Rome, Italy; DR. JOSEPH E. ATCHISON, Parsons & Whittemore, Inc., New York, who discussed potentials for bagasse pulping, and GEORGE GUERRE, Banco de Fomento Agrícola y Industrial de Cuba, Havana, Cuba. For other pictures and reports see PULP & PAPER, Dec. 1954 issue.

been making big plans for self-sufficiency in all grades of paper. Thus, some mills were able to buy in foreign countries important machinery they needed. All of this will, of course, increase future domestic production. The final and complete plan of the government, still in the hands of the Central Bank, will demand great expenditure of money.

One of the high points in the paper industry of Argentina in 1954 was the meeting in Buenos Aires of the historic conference of the C.E.P.A.L., that brought together many North and South American experts of the pulp and paper industry, as well as a number from Europe.

One of the most important South

American companies, "Celulosa Argentina," has improved its big plant for production of pulp in the Province of Misiones, in northern Argentina. It was to be in full production this year. This mill is on an excellent site on the Parana River and near pine forests in that province.

This proximity of forests, combined with reforestation on a large scale, will give that mill and others all the wood necessary to increase future production. Of particular importance is the fact that the pine spruce in this region grow rapidly, reaching within 8 to 11 years fiber consistency comparable to trees of the same variety grown in other parts of the world after 20 to 25 years.

ARGENTINA—PAPER BOARD

AND BOARD

(in short tons)

	Imports	Production	Total
1949	240,836	195,565	436,401
1950	211,949	232,548	444,497
1952	178,509	220,006	398,515
1953	37,025	191,925	228,950
1954	11,550	64,501	76,051

ARGENTINA—WOODPULP

(in short tons)

	Imports	Production	Total
1949	76,519	38,191	114,710
1951	141,622	45,295	186,917
1952	94,979	41,628	136,607
1953	39,173	43,390	82,563
1954	186,797	58,230	245,028

ARGENTINA—NEWSPRINT

IMPORTS

(in short tons)

	Imports
1949	112,012
1950	104,621
1951	117,082
1952	95,484
1953	30,776
1954	54,241

COLOMBIA—IMPORTS

(In thousands of short tons)

	Acetate-Rayon Pulp	Paper Pulp	Newsprint	All Paper
1946	1.8	0.2	11.2	27.5
1948	2.4	0.2	15.5	35.3
1949	1.2	0.2	13.3	40.7
1950	2.6	0.2	20.9	54.0
1951	N.A.	N.A.	25.4	N.A.
1952	2	1	28	N.A.
1953	2	7	20.4	63.3
1954	3	18	21	65

in. wide, which makes 40 tons daily of paperboard from bagasse pulp.

Production of this mill in 1953 was reportedly only 1,150 tons for the first six months. When full production capacity is reached, this mill will probably be able to supply all domestic paper requirements except newsprint. Average paper and board consumption in Colombia is said to be 60,000 tons, including 20,000 tons of newsprint.

Colombia has potentially important fibrous resources for the development of a paper industry. The Magdalena river valley appears to be most suitable. This valley has a vast supply of fibrous raw materials a high level of economic development, river transportation and railroads, adequate water supply with no pollution problems, low priced fuels available from oil lines and caustic soda and chlorine resources from nearby extensive salt beds.

PERU

Grace & Co. in Big Expansion; Another Mill to Use Cetic

Population: 8,714,000; Per capita paper consumption: 7 lbs.

Paper Mills: 6

	1954	1953
Paper Production	27,500	24,000
Pulp production	13,000	13,000
Newsprint imports	12,000	12,000
Pulp imports	5,500	13,000

Principal imports from: Canada, Finland, Sweden, Norway, U.S.A.

Six paper mills in Peru satisfy almost 65% of domestic demand. The entire industry is in Lima with the exception of one mill recently installed in Lambayaque in the north. Annual paper consumption in Peru is about 42,500 tons of paper and board of which 14,500 tons, including all newsprint, are imported.

Two mills produce chemical pulp

PERU—IMPORTS

(In thousands of short tons)

	Ground-wood	Chem. Pulp	Newsprint	All Paper
1947	0.2	2.4	7.4	11.4
1949	0.02	6.8	6.3	20.6
1950	0.8	7.9	9.0	20.9
1951	0.5	6.8	11.7	23.1
1952		10	11	14
1953		13	12	15
1954	2.5	3	12	15

COLOMBIA

CCA Will Increase Mill

Capacity By 50 Percent

Population: 11,300,000; Per capita paper consumption: 12 lbs.

Paper Mills: 1

	1954
Paper production	25,000
Mechanical pulp imports	7,000
Chemical woodpulp imports	11,000

Principal paper and pulp imports from: U.S., Canada, Sweden, Finland, Norway

Plans are underway to increase the production capacity of Colombia's one mill, that of Carton de Colombia, S. A., at Cali, from 24,000 tons of paper and board to 36,000 tons, principally kraft paper. This modern, new mill is jointly owned by Container Corp. of America (Chicago) and Colombian investors. It started up in late 1952 with a new 167 in. Pusey & Jones paper machine and a smaller cylinder board machine 96

Griffith
S.D.T. ROLLS

RUBBER COVERED "Self-Doctoring Topress" Rolls by GRIFFITH of Portland

Helps Port Angeles Increase Newsprint Production



● 2% BETTER WATER REMOVAL
OUT OF FIRST PRESS

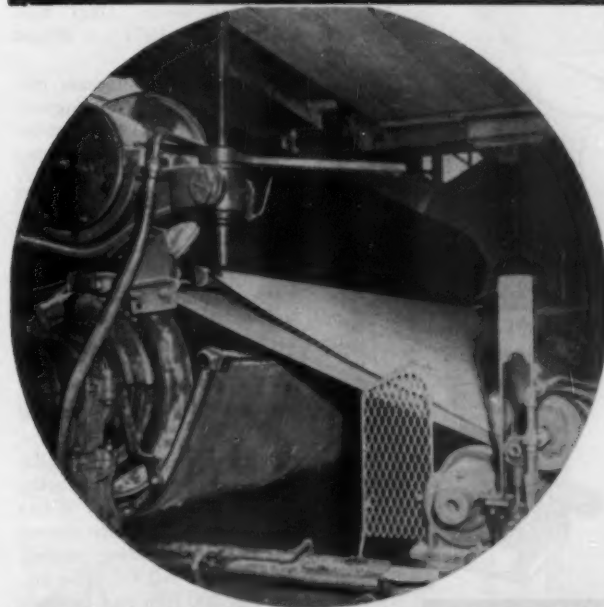
● 400% LONGER FELT LIFE

Crown Zellerbach's No. 2 News Machine at Port Angeles, Washington, is equipped with a Beloit Pick-Up Transfer. In over 100 hours of continuous operation (since last start-up) no breaks occurred at this press. Machine speed is in excess of 1,700 feet per minute.

The top roll is resilient GRIFFITH S.D.T. Three other Self-Doctoring Topress Rolls are running in this three-machine mill. (All were purchased separately from GRIFFITH at Portland.)

GRIFFITH S. D. T. Rolls are also running on Kraft and Sulphite machines in many positions from Lumpcrusher to Sizing Presses.

Bottom Suction Rolls are rubber covered and drilled by GRIFFITH at Portland.



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Mounted along the sides of parabolic "wood chip" bins, Syntron vibrators have greatly reduced production costs at the plant of a leading Pulp and Paper Co. A fast, free flow of chips to the digestors has eliminated fire hazards from "steam lancing" and reduced personnel required to operate the digestors.



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from bagasse; and these and others use also imported chemical pulp and waste paper. Principal pulp imports are bleached sulfite woodpulp (used principally for rayon) from the U.S.A. and Sweden, and unbleached sulfate for mixing with bagasse. From 10% to 15% unbleached sulfate furnish is used for tearing strength.

The two most abundant fibrous raw materials in Peru are the forests of the Amazon and sugarcane bagasse on the coast. The Peruvian government has conducted intensive studies into the possibility of using cético, a tree common to practically all Latin American forests. This was first reported in this section in 1952.

CETICO FOR NEWSPRINT—Peru's domestic paper production is deficient in newsprint and a mill planned by the Banco de Fomento Agropecuario will have a capacity of some 18,000 tons yearly. Raw material will be cético, which has been tested in France and England and approved as a raw material for chemical and mechanical pulp and for newsprint. The selected mill site is at Pucallpa.

EXPANSION BY GRACE & CO.—W. R. Grace & Co. has recently started a \$1,500,000 expansion project to double production at their bagasse pulp and paper mill at Paramonga, Peru. This was the first mill in the world to produce paper from bagasse on a commercial scale. The furnish for some products is mixed with imported quality pulps. Paramonga started up in 1939 after seven years research by Grace engineers and technicians, making some 3,000 tons yearly. Production in 1954 was around 20,000 tons.

Production during first years met market requirements for wrapping and packaging materials in Peru, but recently adopted packaging techniques by Peruvian business and industry have raised demand. It is expected to reach 30,000 tons yearly in the near future for Paramonga grades.

Operations of Grace at Paramonga range from strawboard to printing paper, and include wrapping and bag papers as well as liner and corrugating boards. Converting plants at Paramonga and Lima make paper bags, corrugated containers and folding boxes.

Present expansion includes installation of a new modern 110-in. 5-cylinder Sandy Hill Iron & Brass Works paper machine. It will produce various grades of board, including coated. Startup is expected in 1955. The machine is to run 300 fpm and produce 30 tons to 50 tons each 24 hours. It can be expanded to 80 tons.

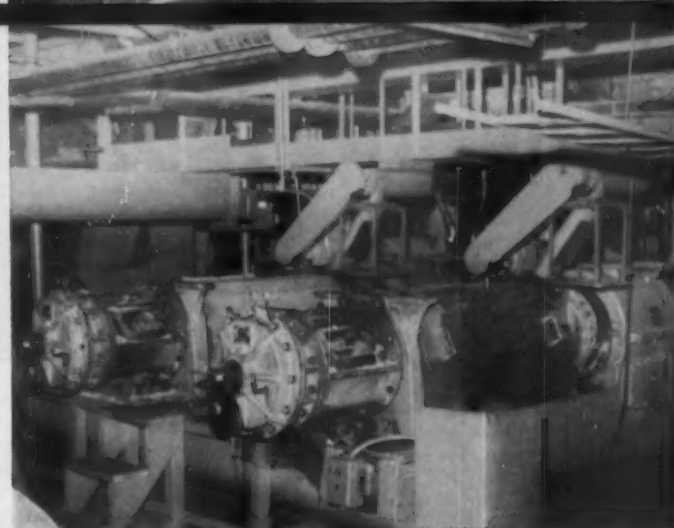
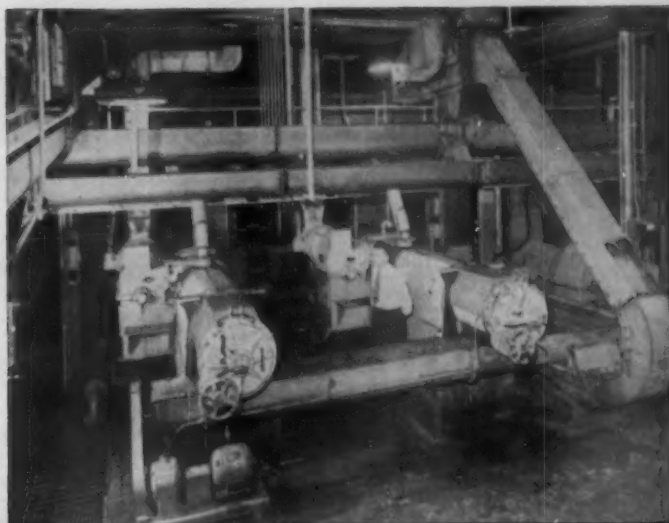
THE
FIRST

2

INSTALLATIONS
OF

Bauer

PRESSAFINERS



Although the Pressafiner is a new and unique machine, three installations are already operating and three other installations are being made.

Pressafiners afford the following advantages in NSSC pulp mills:

1. Stream pollution is controlled by a 65% reduction of total mill B.O.D. requirements.
2. Pressafiners remove 50% of the total B.O.D. rich waste liquors associated with NSSC chips.
3. The expressed liquor combined with the digester blow-down liquor is disposed of as highly satisfactory road binder.
4. A reduction of 20% to 25% in total refining

power may be effected by the pre-refining action of the Pressafiner.

5. Stiffness of the corrugating medium is retained with 20% to 30% increase in headbox freeness.
6. Removal of waste liquor has prolonged felt and wire life.
7. Operation of Pressafiners is simple.

These data are presented in the conclusions stated in a paper, "Development and Use of the Pressafiner at Green Bay," by William Nelson, Technical Director of Green Bay Paper & Pulp Co., Green Bay, Wisc. If you haven't read it, we'll gladly send you a reprint.

T H E B A U E R B R O S . C O .

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LATIN AMERICA

GUATEMALA

World's First Lemon Grass Paper Mill Starts Up Again

Population: 3,000,000; Per capita paper consumption: 6 lbs.

Pulp and Paper Mills: 1

	1954	1953
Paper production	500	350
Total Imports	3,000	3,000

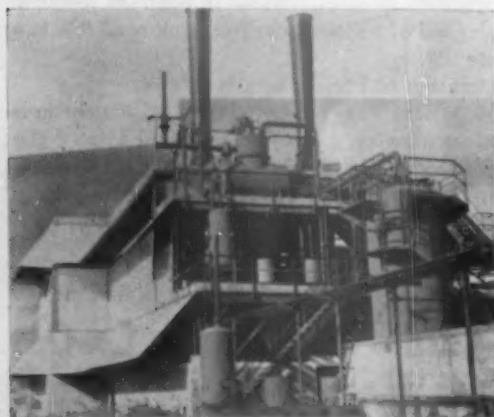
Principal pulp and paper imports from: U.S., Canada and Sweden

It was impossible to think of new developments in Guatemala during the critical years of 1953-54, writes Minor R. Keilhauer, young Guatemalan millionaire industrialist, to PULP & PAPER. In 1954's World Review Number PULP & PAPER expressed concern for his safety during the revolution. Sr. Keilhauer is the founder of the first company to make paper out of lemon grass.

This cylinder machine paper mill near Guatemala City made 9 pt. and 0.35 paperboard. The mill had been shut for lack of markets but has started up again and is now at about 15% capacity; making only paperboard for local consumption.

Mr. Keilhauer advises that Guatemala imports on paper products are increasing to the point that he is considering expanding his plant to make kraft papers.

William MacNaught is in charge of the paper mill and Federico Motto, h., a Guatemalan, is acting superintendent. He was trained by North Dakota-born Mitchell Thom, former British Columbia paper mill superintendent, now manager of United Shoe & Leather Board mill in Mexico City.



Starts Up Again

Guatemala's lemon grass mill, first in world to make paper from lemon grass and now operating at 15% capacity. MINOR R. KEILHAUER, founder, tells PULP & PAPER that Guatemala paper imports are so large that he may expand his mill to make kraft papers.

ECUADOR

Building a Modified Kraft Mill

Population: 3,500,000; Per capita paper consumption: 5 lbs.

Mills: 1 paperboard mill and 1 under construction

Paper production	400 tons
Paper imports	8,500 tons

The paper industry in Ecuador at present consists of one small paperboard mill producing about 400 tons a year from waste paper. An integrated pulp and paper mill is under construction at Latacunga, near Quito, expected to produce some 3,000 tons yearly, principally wrapping paper. Its pulp process is to be a modified sulfate process; raw material has not been decided.

The government of Ecuador is said to have one of the most advanced departments of forestry in Latin America, headed by Dr. M. Acosta Solfa.

Probably the best site for a wood-pulp mill would be at Esmeraldas, at the mouth of the Esmeraldas River. There, water is plentiful and forests are nearby, and there would be no effluent disposal problem. Most suitable wood would be the guaruma tree (called cetico in Peru), successfully tested for chemical and mechanical pulp in France and England. This mill's products could go by sea to Guayaquil and from there by train to Quito.

Another possible site, less favorable than Esmeraldas, is near Guayaquil, but longer pulpwood hauling distances would be involved and greater integration of forest industries would be needed for economical operations.

The possibility of using bagasse pulp also exists near the large sugar mills at Milagro in the province of Guayas. Some 40,000 tons of bagasse would be available yearly. However, as this is mostly used for fuel, an economical substitute would be needed.

REST OF AMERICA

Venezuela Adds 2 New Mills; Guianas To Make Wallaba Pulp

There are an estimated 35,000,000 people in Latin American nations not discussed in this section, using an average of 50 lbs. per person per year in Uruguay to 3 to 10 lbs. in others, including:

Uruguay—Pop.: 2,360,000. Per capita use of papers: 50 lbs. Production: 35,000 tons.

Paraguay—Pop.: 1,500,000. Per capita use of paper: 2 lbs. Production: 450 tons.

Venezuela—Pop.: 5,300,000. Per capita use of paper: 25 lbs. Production: 8,800 tons.

Bolivia—Pop.: 3,100,000. Per capita use of paper: 2 lbs. Production: 800 tons.

Costa Rica—Pop.: 890,000. Per capita consumption: 10 lbs. Paper production: 3,000 tons.

Studies by United Nations teams of pulp and paper technicians have recently been completed in most of the Latin American countries. These reports are predominantly optimistic in tone, in appraising the potentials for developing pulp and paper industries within their borders.

DUTCH- FRENCH- BRITISH GUIANAS—The heavily forested (87%) areas of the Guianas offer possibilities for pulp and paper industries, but many difficulties would have to be overcome. Although blessed with extensive river networks, logging operations would have to be mechanized.

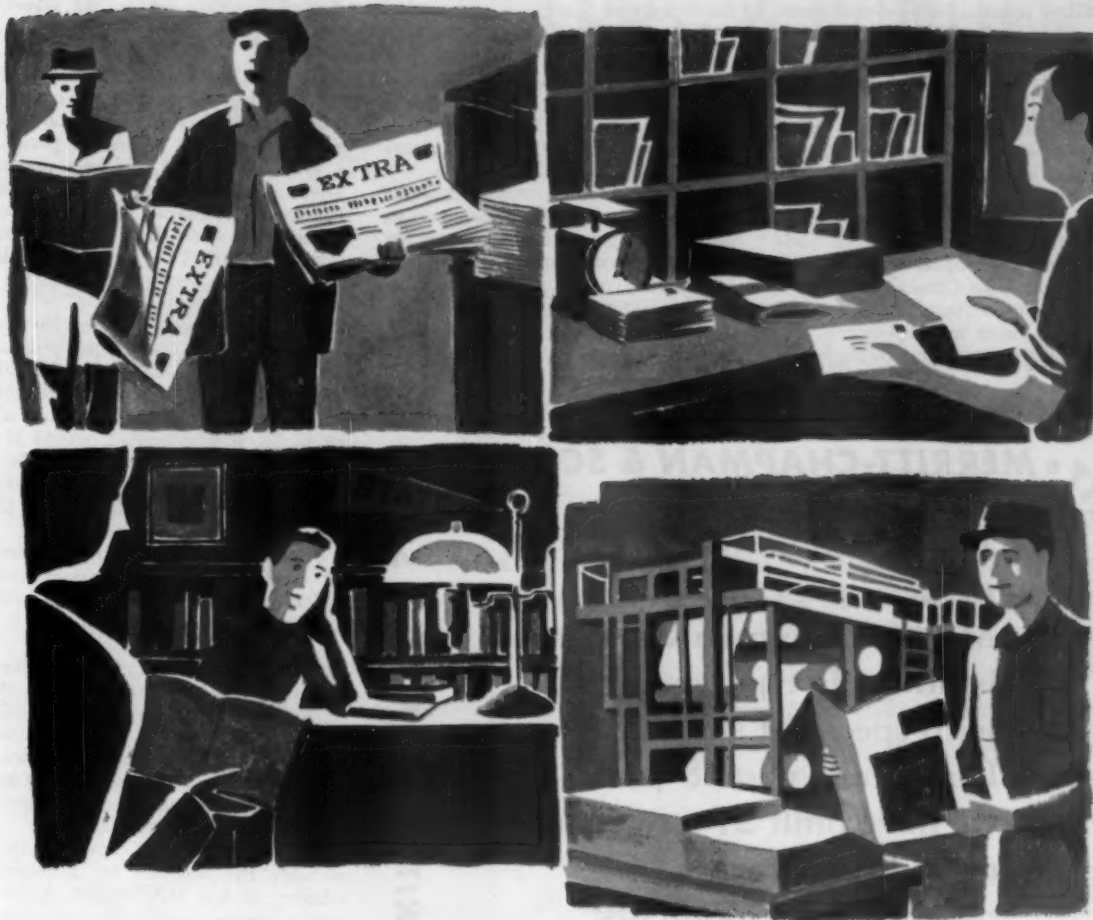
Experiments on the wallaba tree, most important species in the Guianas, indicate its suitability for sulfate pulp to produce practically every grade of paper except those requiring high strength.

Low domestic paper consumption would mean the establishment of industries in the Guianas primarily for export markets.

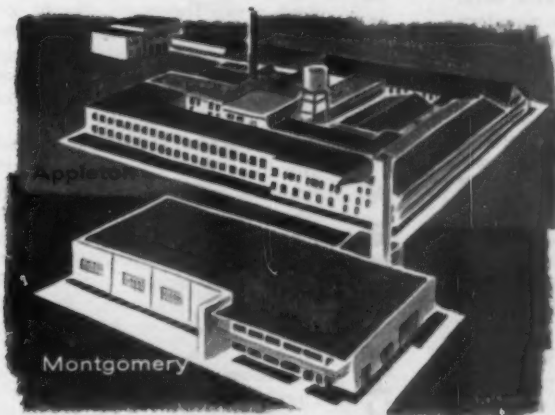
VENEZUELA—Oil-rich Venezuela uses about 25 lbs. of paper per person and estimated future consumption, it is said, will be 31.6 lbs. in 1960 and 39.6 lbs. in 1965.

There is one paper mill in Venezuela, Compania Anonima Fabrica de Papel, in Maracay in the State of Aragua, which makes about 5,500 tons of kraft and sulfite papers from imported chemical pulp and waste paper. Other small paperboard mills make a total of 3,300 tons yearly.

Walter P. Paepcke, chairman of the board of Container Corp. of America, announced last year the formation of Corrugador de Carton, S.A., to construct a modern corrugated container mill. Operations were to have started in late 1954.



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Venezuelan industrialists Eugenio Mendoza, Alberto Vollmer and Francisco Mendoza head a new firm named C. A. Venezolana de Pulp y Papel, (Venepal), capitalized for 25 million bolivars (\$7,500,000), to build a 30,000 ton a year kraft mill using sugar cane bagasse to make paper for bag, wrapping and corrugating for boxes. Purchased woodpulp would be required, especially if plans are carried out to make higher quality papers. Sites favored are Lake Valencia or Lake Caracaibo.

The best location for integrated pulp and paper mill operations, according to recent surveys, using Vene-

zuela's virgin forests, is said to be in the vicinity of San Felix in the State of Bolivar on the Orinoco River.

DOMINICAN REPUBLIC—No mills are to be found in the Dominican Republic for its 2,200,000 people, who consume some 10,000 tons annually or about 7 lbs. per person.

Of raw materials, only bagasse is said to be in sufficient quantities to justify setting up pulp operations. An independent company made a survey in 1952 and plans advanced for an initial 8,500 capacity bagasse mill to produce 2,500 tons of printing and writing, including newsprint, and

4,000 tons of wrapping and packing paper, including paper for cement sacks.

PARAGUAY—Here the domestic market is said to be too small to support a paper mill. Per capita paper consumption is about 2 lbs. per person, a total of about 1,750 tons yearly. There is one small roofing board mill Papeleira Paraguaya, near Asuncion which makes 450 tons a year. Forests cover some 50% of Paraguay, of which 50% to 60% are virgin forests.

URUGUAY—Paper consumption is high in Uruguay, 50 lbs. per person. Domestic production is around 35,000 tons and imports total about 26,500 tons. A rise in per capita income of 1% to 5%, it is estimated, would lift per capita consumption to 126 lbs. and paper and board consumption from 74,617 tons to 179,307 tons in 1965.

Fabricas Nacionalde Papel makes 20 tons a day of straw pulp and 1,500 tons monthly of printing and writing and cardboard.

COSTA RICA—Per capita paper consumption here is around 10 lbs. A 3,000 ton capacity kraft paper mill recently started up, using waste manila hemp from nearby factories. This mill, however, is establishing its own raw material supply—a fast growing type of abaca on plantations.

Tropical forests of Costa Rica are probably the best bet for a future industry, says a U.N. report. Abundant guarumo, eucalyptus and poro gigante are found in Costa Rica's 9,073 sq. mi. of accessible forests, which cover about 46% of the total land area. The poro gigante grows profusely and rapidly and can easily be cultivated in plantations. Experiments in France and the U.S.A. indicate its suitability for papermaking.

HONDURAS—Pine forests abound in Honduras but serious depredations from fire, soil erosion due to overcutting, and injurious exploitation of the pine resin have created a serious problem. Other possibilities for setting up a paper industry are sugarcane bagasse and bamboos. Per capita paper consumption in Honduras is around 3 to 4 lbs. per person.

Because of plentiful pine forests, Honduras has been selected as the site for a new pulp and paper mill to be established by the five Central American Republics. A technical school will be established in Guatemala.

For the five Central American nations, paper consumption is around 20,000 tons annually, including 8,000 tons of newsprint.

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American-Israeli Paper Mills, Ltd.	Hadera, Israel
B.F.D. Company	Ogdensburg and Plattsburg, New York
Bedford Pulp & Paper Company, Inc.	Big Island, Virginia
Camp Manufacturing Company	Franklin, Virginia
Champion Paper & Fibre Company	Pasadena, Texas
Container Corporation of America	Fernandina, Florida
Dexter Sulphite Pulp & Paper Company	Dexter, New York
Hudson Pulp & Paper Corporation	Palatka, Florida
National Container Corporation	Jacksonville, Florida
St. Joe Paper Company	Port St. Joe, Florida
St. Regis Paper Company	Jacksonville, Florida
Southland Paper Mills, Inc.	Pensacola, Florida
Tasman Pulp & Paper Co., Ltd.	Lufkin, Texas
Union Bag & Paper Corporation	Kawerau, New Zealand
	Savannah, Georgia

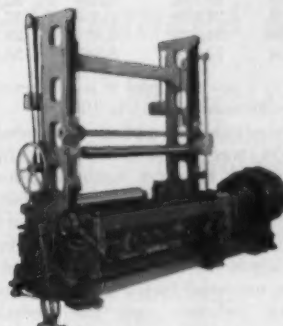
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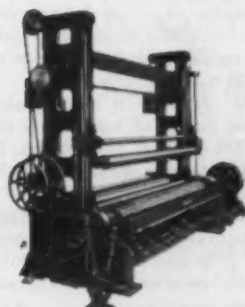
LANGSTON SLITTERS & WINDERS



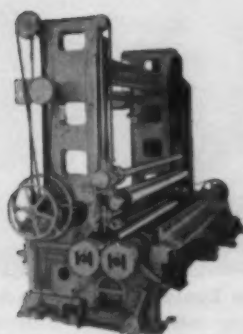
MODEL AA



MODEL BA

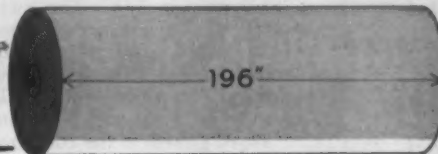


MODEL CA



MODEL DA

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↙ to this wide

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SPECIFICATIONS	MODEL AA	MODEL BA	MODEL CA	MODEL DA
Widths	40, 50, 60 and 72"	62, 72, 82 and 92"	82, 92, 102, 112 and 122"	82 to 196"
Speeds to	1500 fpm	1750 fpm	3000 fpm	4000 fpm
Max roll dia	28, 36 or 42"	40, 50 or 60"	40, 50, 60 or 72"	40, 50, 60 or 72"
Min cut	1/4"	1 1/8" stand 1 1/4" spec	2 1/4" stand 1 1/2" spec	3" stand 1 1/2" spec
Winding drums dia	8 1/4"	9 1/2"	11"	14 and 18"
Idlers dia	3 1/2 or 6 1/4"	6 1/2 or 9 1/8"	8 1/2 or 10 1/4"	8 1/2, 10 1/4 or 12 1/2"
Cutter shaft dia	3"	4 1/4"	5 1/2"	7 1/4 and 8 1/4"
Pressure roll dia	3 or 4 1/2"	5 1/2 or 6 1/2"	7 1/2 or 9 1/2"	8 1/2 or 10 1/2"
Weight	9000 lb (50" mach)	17,000 lb (72" mach)	23,000 lb (102" mach)	36,000 lb (122" st)



LANGSTON

Leadership by design



OCEANIA

NEW ZEALAND

Pulp-Paper is No. 4 Industry— "Radiata" Pine Booms Growth

Population: 2,700,000; Per capita paper consumption: 104 lbs.

Pulp & Paper Mills: 5 (2 under construction)

Woodpulp Mills: 3 (1 under construction)

Production (short tons) 1954 1953

Paper and board* 45,106 30,659

Chemical woodpulp 48,500 8,303

Groundwood pulp 33,116 30,242

Paper and board imports 64,278 55,878

Woodpulp imports 5,989 10,541

Woodpulp exports 21,933 4,846

Principal paper grades made: Kraft, board, tissue

Principal paper imports from: Canada, United Kingdom

Principal pulp imports from: Sweden

Principal pulp exports to: Australia

(*Does not include fiberboard—see another table with this section)

By A. R. Entrican

Director of Forestry, New Zealand
Forest Service

Thirty years ago the New Zealand Forest Service began to establish its 300,000 acres of exotic forests on the volcanic plateau of the North Island to supplement rapidly depleting native forests. At the same time private companies began planting which led to a similar area of established forest. These efforts have resulted in an exotic forest resource of 600,000 acres, or two-thirds of those in the dominion. The principal species is *Pinus radiata*.

After establishment of this resource came plans for its utilization. During the past year many of these plans have

been realized. One pulp and paper mill completed its first full year of operation, another has been extending its capacity, and a third is practically ready to begin production. A significant feature of these mills is the high degree of integration with sawmilling.

WHAKATANE ADDS U.S.-MADE MACHINE—Whakatane Board Mills, Ltd., began construction of its mill at Whakatane in 1937. The mill pioneered in manufacturing paperboard from radiata pine when production commenced in 1939. At this time the demand for paperboard was considered to be 9,000 tons per annum.

Rapid growth of the company's forest (first planted in 1925) had justified expectation by 1943, and the company began pulping its own logs, hauled 26 miles to the mill by its own railway.

In 1951 when paperboard, instead of wood, was first used for packaging export New Zealand butter, and the contract for manufacturing material for plasterboard facings was secured, production figures climbed to 16,441 tons. The demand, by this time however, was near 27,000 tons.

To meet this, a second paperboard machine was ordered in 1952, this time from Black-Clawson Co., U.S.A., and it went into production in mid-1955. This machine will increase its annual production of paperboard to 32,000 tons, of which they expect to export five to six thousand tons.

A new pulp preparation plant for paper and chemical pulp waste was installed this year to replace original equipment. Also in course of construction is the semi-chemical pulp mill. Costing approximately \$800,000, this will enable Whakatane Mills to produce about 4,000 tons of unbleached pulp annually, which will replace pulp imported from overseas at a cost of \$560,000 per annum. This plant will utilize waste slabwood from the com-

NEW ZEALAND—PAPER-BOARD

(in long tons)

	Wrapping Paper tons	Cardboard tons	Fibre Board sq. ft. (thousand)
1940	6,253	6,620	21,958
1945	6,335	14,284	30,416
1947	7,619	13,329	47,766
1950	7,541	16,584	54,430
1951	6,673	16,416	55,164
1952	6,895	15,729	59,786
1953	11,645	17,779	61,850
1954	22,494		

* Estimated by PULP & PAPER

NEW ZEALAND—WOODPULP

(in long tons)

	Production tons	Imports tons	Consumed paper and board mills tons
1940	5,881	7,090	12,867
1949	21,438	14,523	29,772
1950	23,714	9,508	32,901
1952	26,685	9,454	36,139
1953	34,415	9,412	39,500
1954	72,772	5,347	58,536

pany's sawmill, and it is to commence production in March 1956.

Groundwood pulp produced in 1954 was 8,700 tons. The amount required to serve both machines is estimated in the region of 14,000 tons.

During the year 43,000 tons of kraft pulp were made at Kingleith in the center of the North Island. About half was exported to the Australian newsprint industry and the remainder pumped to the paper mill. The Walmesley paper machine in the paper mill produced 16,000 tons of kraft paper for multiwall paper bags, solid fiber and corrugated containers and shopping reels. Present production exceeds 20,000 tons annually.

The company is cutting about 19 million cu. ft. of logs yearly from its 176,000 acres of pine forests. Present cutting of sawn timber is at the rate of 60 million bd. ft. annually. Approximately one-sixth was exported to Australia. Further expansion in kraft pulp and sawn timber will take place when a new rotary digester and



Newest Pulp-Paper Enterprise in New Zealand

Air view of Tasman Pulp & Paper Co.'s pulp, newsprint and sawmill operations at Kawerau, starting up in 1955. Already a second newsprint machine is planned. Pine, Douglas fir and larch from 270,000-acre Kaingaroa State Forest are being used.



These Mills Make New Zealand Forests an Asset

Air view of new Kingleith operations of New Zealand Forest Products Inc. Paper mill is 600 ft. long building at left; next are pulp mill and boiler plant; causticizing unit at lower right; sawmill at upper right. Administration block is in center left.

A. Halvar Lundberg

Tore Ahlen

Len Lundberg

KAMYR CONTINUOUS COOKING AND PULP WASHING

Advances with the Wood Pulp Industry!

All over the world—in Australia, New Zealand, Japan, France, Italy, Finland and Sweden, KAMYR Continuous Cooking and Pulp Washing Systems are proving that sulphate pulp can be made with this advanced process to set new standards of uniformity, higher yield and quality at lower cost. The latest and largest KAMYR installation is now on order for Western Canada.

The men associated with A. H. Lundberg, Inc. and Lundberg Ahlen Equipment Ltd. have long been in intimate contact with the KAMYR development and bring to the wood pulp industry in the West the same close representation on KAMYR as they have for the other well established companies listed below.

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Asplund Defibrators, Bark Presses

CHEMIPULP PROCESS INC.

Hot Acid Recovery, Pulping Processes

HYDRAULIC SUPPLY MANUFACTURING CO.

Evaporators

KAMYR INCORPORATED

Continuous Cooking, Pulp Washing

NICHOLS ENGINEERING & RESEARCH CORPORATION

Vortraps, Vortacs, Vorjects

ROSENBLAD CORPORATION

Blow Heat & Gas Recovery, Spiral Heat Exchangers

THE SANDY HILL IRON & BRASS WORKS

Kamyr Bleaching Equipment, Washers, Wet Machines

Lundberg Ahlen Equipment Ltd.

146 East Broadway

VANCOUVER 10, B.C., Canada

telephone: EMerald 4646

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Hot Acid Recovery, Pulping Processes

HYDRAULIC SUPPLY MANUFACTURING CO.

Evaporators

KAMYR INCORPORATED

Continuous Cooking, Pulp Washing

NICHOLS ENGINEERING & RESEARCH CORPORATION OF CANADA LTD.

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PAPER MACHINERY LTD.

Kamyr Bleaching Equipment, Washers, Wet Machines

PAPER MILL EQUIPMENT LTD.

Screens & Misc. Pulp Mill Equipment

additions to the bandsaw mill are installed.

Output of building fiber board exceeded 60 million sq. ft. yearly. This figure will be raised to 75 million. During the last year, New Zealand Forest Products Ltd. opened a solid fiber container plant. By mid 1957, it expects to have completed plant extensions costing \$10,000,000, including a veneer peeling plant and timber dry kilns.

At Tokoroa, 4½ miles from the Kinleith industries, the company has erected 675 employee houses. Work has already started on a further 300. When New Zealand Forest Products Ltd. erected its first house in 1948 the population of the town was 140. Today it is near 6,000 and according to postal officials, will reach 10,000 by 1960. A director of community services heads recreational and cultural services.

MILLS STARTING UP IN 1955—Excellent progress has been made with the construction of the Tasman Pulp & Paper Co.'s \$60,000,000 pulp, newsprint and sawmill at Kawerau which will utilize pines, Douglas fir and larch from the 270,000 acre Kaingaroa State Forest, 35 miles away.



Canadians Go to New Zealand

Abitibi Power & Paper Co. has a management contract with Tasman Pulp & Paper Co., getting its new mill in New Zealand into production this year, and several of its Canadian technical personnel have joined the Tasman staff. Here is a group, photographed at Abitibi's head office in Toronto, before they left for "down under." Right to left: CLIFF ANDERSON, HERB TEMPLE, DON PERHAM, IAN McGIBBON, JIM RENNIE.



First Train of Logs for a New Mill

First trainload of logs for Tasman Pulp & Paper's new \$60,000,000 integrated mills. A logging company, jointly operated by government and Tasman do the logging. An American Hoist & Derrick (USA)—Dominion Engineering (Canada) affiliate supplied shovel with Berger (Seattle, Wash.) tongs, and truck and trailer is from Pacific Truck & Trailer Co., Vancouver, Canada. This is at Marajura, on Kaingaroa State Forest edge.



Pioneered Use of Pine—Is Growing

Whakatane Board Mills of New Zealand is installing a new board machine in 1955 built for them by The Black-Clawson Cos., Hamilton, Ohio, U.S.A.

The engineering consultants, Sandwell & Co., Vancouver, B. C., Canada, and the contractors, Fletcher-Merritt-Raymond, estimated the pulp mill would be operating by mid-1955 and newsprint mill and sawmill in the latter part of 1955. Capacity will be 75,000 tons of newsprint from the 285-inch Walmsley newsprint machine, 36,000 tons of market pulp and 72,000,000 bd. ft. of sawn timber. Already, the company is considering installation of a second newsprint ma-

chine.

While construction of the Tasman's plant proceeds, a \$56,000,000 program of government works is being carried out to serve the project. Thirty miles of major and 40 miles of secondary logging roads have been built in Kaingaroa Forest and a logging town of 220 houses and accommodation for 150 single men is located at the forest edge at Murupara. The men, mostly New Zealanders, but including over 100 Canadians, are employed by Kaingaroa Logging Co., (a Government-Tasman subsidiary). At Kawerau, a town of 540 houses and accommodations for single men houses Tasman employees.

The logging firm will be responsible for logging and delivery to railhead at Murupara of 18 million cu. ft. of clear-felled timber annually. The New Zealand Forest Service will deliver 5 million cu. ft. of thinnings to the railhead, giving Tasman a total log input of 23 million cu. ft. An American Hoist & Derrick-Dominion Engineering shovel, Berger (Seattle, U.S.A.) tongs and diesel trucks from Pacific Truck and Trailer Co., Vancouver, Canada, are used. First train loads of logs travelled over the new 35-mile line linking Murupara with the mill at Kawerau Apr. 14, 1955.

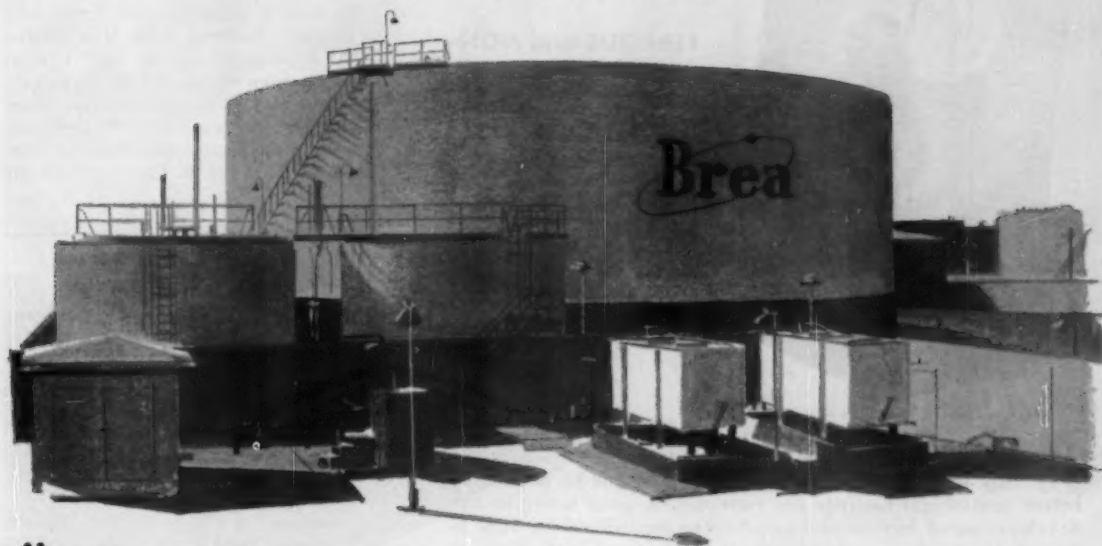
Under agreement with Albert E. Reed & Co., Ltd., Tasman will receive the benefit of that well known British paper company's experience in research, production marketing. An agreement has also been concluded with the Abitibi Power & Paper Co. of Canada, which supplied a technical staff to aid in start-up. Other operators have arrived from Finland.

Five-year contracts with Australian and New Zealand publishers have been concluded for newsprint, and sales of pulp and lumber are well advanced.

OTHER MILLS—Incorporated in 1903, New Zealand Paper Mills, Ltd., at Matura in the South Island con-

AMMONIA?

Here's Plenty* at Your Doorstep

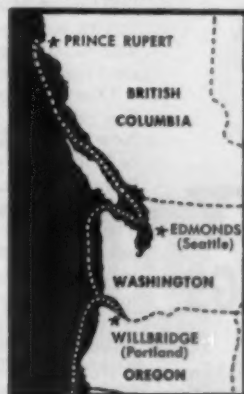


* BREA'S NORTHWEST LOCAL TERMINAL capacity is 5,000 tons of contained ammonia for prompt, short-haul service to pulp mills.



UNION OIL TANKSHIP delivery of Brea Aqua Ammonia is available to pulp mills and industrial users with deep-water, dockside facilities.

TANKER DELIVERY route covers Pacific Northwest ports and plant facilities from Willbridge, Oregon, to Prince Rupert, British Columbia.



Northwest sulfite mills using ammonia-base cooking liquors now call on local Brea distribution terminals for volume supply and prompt delivery of ammonia in ready-to-use "Aqua" form. Brea "Aqua" is a 24.5 per cent ammonia-in-water solution, available by direct Union Oil tankship delivery, or by barge or tank truck from Brea's local distribution terminals at Edmonds, Washington, and Willbridge (Portland), Oregon. While Brea "Aqua" is delivered in convenient solution form, it is *competitively priced with anhydrous per ton of guaranteed net contained ammonia.*

Mills now using Brea Aqua Ammonia find that easy, in-plant handling and prompt short-haul service from nearby Brea supply terminals are high on the list of its many advantages. Get the facts about today's best buy in an ammonia product-service combination for sulfite pulp mills. Call your local Union Oil Sales Office, or phone, write or wire



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THE ANSWERS THROUGH RESEARCH



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and LINERS**

Here at Sandusky Foundry, technicians and engineers are constantly searching for and developing means of producing better centrifugal castings for your use. A pace setter in the development of ferrous and non-ferrous centrifugal castings to meet both standard and specialized needs, the Chief offers an ever expanding assistance program.

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Chief SANDUSKY CENTRIFUGAL CASTINGS

FERROUS AND NON-FERROUS

SANDUSKY FOUNDRY AND MACHINE CO., Sandusky, Ohio



OCEANIA

tinue to produce a substantial quantity of the Dominion's paper requirements.

Work has begun on a new \$2,000,000 tissue and light paper mill for Caxton Paper Mills, Ltd., who expect to start producing up to 5,000 tons annually by April 1956. It is located at Kawerau alongside the Tasman plant, from whom it will draw pulp and steam requirements. The tissue machine was being made by Bertrams, Ltd., in Scotland for delivery by Sept. 1955. Sandwell & Co. designed the plant.

AUSTRALIA

Industry Keeps On Expanding; Starts to Grow Own Softwoods

Population: 9,070,000; Per capita paper consumption: 130 lbs.

Paper and board mills: 16. Pulp mills: 5
Production (short tons) 1954 1953

Paper 299,200 208,198
Woodpulp 154,000 107,155

Paper & board imports 273,900 160,878

Woodpulp exports 79,030 33,214

Principal paper grades made: Newsprint, kraft, sulfites, boards.

Principal paper imports from: U.K., Scandinavia, Canada

Principal woodpulp imports from: Scandinavia, New Zealand, Finland.

Australia still has a long way to go before becoming self-sustaining in pulp and paper, but the commonwealth has been making real progress in recent years, and the industry reported a healthy advance in 1954. Prospects are for continuing expansion.

Capacity of the Australian industry is 180,000 tons of woodpulp and 335,000 tons of paper and board, and these figures are expected to reach 200,000 and 420,000 respectively within the next few years.

One new mill for manufacture of fine papers is being built at Nowra, New South Wales, for Wiggins Teape & William Nash Pty., Ltd. It will be known as Shoalhaven Paper Mill.

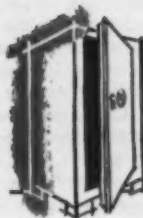
Papermakers, Ltd., formerly Thomas Owen & Co. (Aust.) Ltd., is now in full production of vegetable parchment, this having been initiated in 1953. Newsprint production has been rising due to access to more power in Tasmania, where Australian Newsprint Mills is replacing some imports from Scandinavia and North



Microphotograph of New Process glue as it leaves the drier before being ground to uniform particle size.

SWIFT'S *New Process* GLUE

**... FOR
HIGH RETENTION
OF VALUABLE
TITANIUM DIOXIDE & CLAY**



**SWIFT'S
New Process GLUE**

is available in a wide range of quality controlled, uniform specifications, scientifically processed to assure maximum efficiency under varied operational conditions for these important uses:

- For creping of facial and toilet tissues and paper napkins.
- For use in flotation type saveall systems.
- For retention and recovery of valuable processing components.
- For sealing.

This is Swift's New Process Glue . . . a water soluble animal protein with *exceptional* colloidal properties. Its unusual, crystalline, honeycomb structure quickly absorbs water to give a solution that promotes high retention of valuable pigments and clay in the sheet.

Because it is produced by an entirely new process which assures light color and freedom from contaminating elements, New Process Glue is high in *active* and effective properties . . . less can be used to go *farther*. Savings realized in retaining valuable pigments such as titanium dioxide, will more than offset the moderate cost. The efficient retention action will help to produce a whiter, brighter, more uniform sheet—brighter pigmentation of colored stocks.

An informative bulletin, outlining formulas, equipment and instructions for using Swift's New Process Glue is available without obligation. Write for details and remember . . .

ONE TRIAL IS BETTER THAN A THOUSAND CLAIMS

SWIFT & COMPANY



ADHESIVE PRODUCTS DEPARTMENT

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Ultra-Modern Building Houses Paper Machine

This strictly modern building is at Australia Newsprint Mills, near Hobart, Tasmania, and it houses a paper machine.



An American-Built Machine in Australia

Machine in Australia Paper Mfrs. Ltd., mill at Fairfield, Victoria, has 63 dryers, producing board at 3.75 tons per hour.

"From ingot to fourdrinier wire"



ANNEALING THE WIRES

Just as one alloy differs from another, so do their individual requirements for annealing vary. A definite ratio of speed and temperature must be used for each type. Skilled employees, tending our modern annealing furnaces, adhere faithfully to the proper speed-heat formulae so that your Eastwood wire will have the longest possible life.

Because the Eastwood-Nealley plant is a completely integrated one, every wire we ship has undergone thorough and continual analysis, control and testing from the raw metals to your finished fourdrinier wire ready for quality paper production.

We are proud to say they are truly ours—"from ingot to fourdrinier wire".

EASTWOOD-NEALLEY CORPORATION
Belleville, N. J.

America by using increasing amounts of New Zealand pulps.

Eric Crane, production supt. for Australia Paper Mills Ltd., which has five mills now in Australia, told PULP & PAPER of the growth of that company to 220,000 tons a year of board, paper, tissue, etc. It makes about 80,000 tons a year of kraft pulp from eucalyptus. It is erecting a new mill at Petrie, 70 miles north of Brisbane, where it will start up a 134 in. Wamsley machine and make solid fiber boxes. It also will start up a new Yankee dryer, 200 in. trim, for lightweight machine-glazed kraft paper at the Maryvale mill in Jan. 1956. Recently it made the first tissue in Australia by converting an old Yankee machine.

Consumption of pulp, paper and paperboard is steadily increasing in Australia. This is partly due to increasing population and industrialization. Many new uses also have been found for paper products and further developments seem likely in packaging, according to C. V. Gray, director of the Division of Industrial Development for the Commonwealth.

Prosperity as well as activity is reflected in recent earnings of Australian companies. Australian Newsprint Mills, operating mills at Boyer, Tasmania, reports an 80% increase in profits for the past year, due mainly to additional electric power made available to the company.

This company has found that pulp manufactured from New Zealand's radiata pine is satisfactory for bleaching with the eucalypt mechanical pulp made at Boyer. It is bleached at Boyer from chlorine supplies from Melbourne and lime quarried and burnt locally by the newsprint company.

15 MILLS FLOURISHING—Pulp and paper production now flourishes in all the Australian states, with two mills in New South Wales, nine in Victoria, three in Tasmania and one each in Queensland, South Australia and

AUSTRALIA—GENERAL

	No. of Mills	No. of Employees	Value of Materials (In Thousands of Dollars)	Value of Output
1951	14	6,336	\$23,300	\$37,800
1952	14	6,750	\$24,000	\$42,000
1953	16	7,237	\$35,000	\$70,000

(Latest available)

Australia—Paper (in tons)

	Production Newsprint	Board	Total All Paper & Board
1946-47	31,734	76,563	188,870
1947-48	31,335	83,213	192,320
1948-49	30,260	85,307	193,460
1949-50	30,472	99,519	205,196
1950-51	33,000	103,000	220,000
1951-52	33,000	110,000	235,000
1952-53	70,000	112,000	270,000
1953-54	70,000	120,000	330,000

	Paperboard Imports Prod.	Wrapping Paper Imports Prod.
1942-43	770 70,246	1,000 40,000
1948-49	23,602 85,307	18,000 16,543
1949-50	17,403 99,519	n.o. 30,806
1950-51	42,400 103,000	n.o. 36,229
1952-53	40,000 120,000	15,000 40,000

n.o.—not obtained (Latest available)

AUSTRALIA—WOODPULP

(in thousands of short tons)

	Chemical Prod.	Imports	Mechanical Prod.	Imports
1949	63	44	38	3
1950	68	37	38	1
1951	75	46	40	2
1952	77	53	47	6
1953	70	28	40	1.5
1954	103	48	92	5

Source: Australian government, U. S. Pulp Producers Assn., Canadian P & P Assn.

Western Australia. Nearly all grades, with exception of magazine printing paper, are produced, although not in sufficient quantity to meet local requirements.

Australia uses about 225,000 tons of newsprint annually, and since the Tasmania mills, the only producers of newsprint in the Commonwealth, have a capacity of about 70,000 tons, imports are necessary—about 160,000 tons in 1954.

Demand for wrapping, printing, writing and other papers is estimated at 180,000 tons annually, as against local production of about 103,000 tons. Expansion of the existing mills is expected to bring local demand and supply closer in line within a few years—a situation which will also probably apply to paperboard.

Pulp production in Australia increased from 6,000 tons in 1938 to 98,896 tons in 1952, 125,236 tons in 1953 and an estimated 172,465 tons for the calendar year 1954. Consumption meanwhile has risen from 42,000 tons in 1939 to 138,772 tons in 1952, 201,668 tons in 1953 and an estimated 245,000 tons in 1954. It is expected that the tendency for imports to represent a progressively smaller proportion of requirements will continue.

AUSTRALIA PLANTS SOFT-WOODS—Although present expansion in Australia's pulp making capacity should increase the short-term need to import softwood pulps for mixing with eucalypt pulp for high grade paper, an ambitious program of plant-

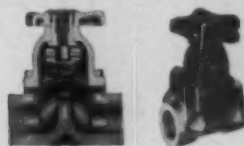
TOUGH ACE-ITE PLASTIC PIPE

General-purpose moderately priced rubber-plastic pipe handles most common chemicals to 170 deg. F. . . except few strong acids and organic solvents. Tough, odorless, tasteless. Rigid pipe 1/4" to 6". Bulletin 80.



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for all-plastic piping systems



Trouble-free plastic diaphragm valves . . . choice of general-purpose ACE-ITE, ACE PARIAN (polyethylene) or ACE SARAN. Handles most corrosive chemicals and food ingredients. Sizes 1/2" to 2", 50 psi. at 77 deg. F. Bulletins 80 and 351.

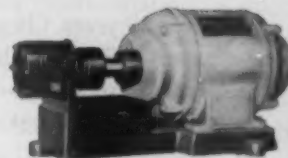
ACE chemical equipment
"more resistant to more corrosives"
From this "super-market" of corrosion-resistant equipment . . . backed by more than a century of engineering experience . . . you can select with confidence.



ACE-HIDE ACID PAIL

Practically indestructible

Its made of a new rubber-plastic material that's tough, resilient, suitable for handling most acids and alkalis. 3-gal. size. Easy-pour, drip-proof spout. Also 1-qt. and 2-qt. dippers, hard rubber bottles, etc. Write for name of nearest dealer.



MIGHTY MIDGET

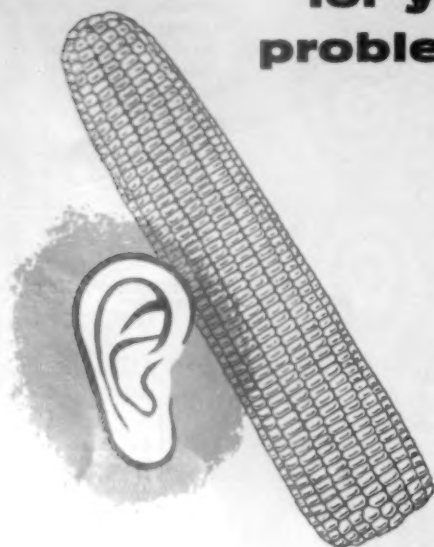
for pumping acids

Jabco neoprene-impeller pump made of Ace hard rubber out-lasts, out-pumps anything in its pressure, size and price class. Capacity from 15 gpm. at 22 ft. head to 5 gpm. at 72 ft. head. Ask for free Bulletin 97.

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for your
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Whether your problem is in connection with sizing or coating, Clinton starches and dextrins are almost certain to provide an answer.

For example, when you surface-size with Clinton starch, you'll improve strength . . . improve "finish" or smoothness . . . increase "rattle" . . . and reduce surface fuzz, thereby improving printing characteristics.

For over 30 years, Clinton has turned an attentive ear to paper makers' problems. Our answers to their problems have contributed much to the tremendous advances in paper making over the past few decades.

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: with your specific problems is
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Quality products
FROM THE WORLD'S CORN CENTER



CLINTON FOODS INC.
Corn Processing Division
CLINTON, IOWA

ing softwoods is being undertaken by at least one large Australian company and this will make the country less dependent on overseas long-fibered pulps.

Over the past few years, states C. M. Forsyth-Smith, Canada's commercial secretary at Sydney, developments in the fields of plastics and rayon have created a demand for dissolving woodpulp and it is estimated that the present market is between 5,000 and 6,000 tons annually. A large proportion of this is supplied from Canada and elsewhere in the dollar area. This market is likely to increase, particularly because, over the next two or three years, a plant may be erected to produce transparent cellulose film. Several overseas producers of the film have, in recent months, looked over the Australian scene with a view to establishing plants.

HAWAII

Hawaii Dream of Big Mill Takes More Definite Form

Population: 500,000; Per capita paper consumption: 166 lbs.

Paper production: 40,000 tons (building board). Bagasse pulp: 40,000 tons.

*Paper imports: 52,000 tons
Principal paper imports from: U.S., Canada*

Hawaii may get its first market pulp or major pulp and paper mill before very long, after all.

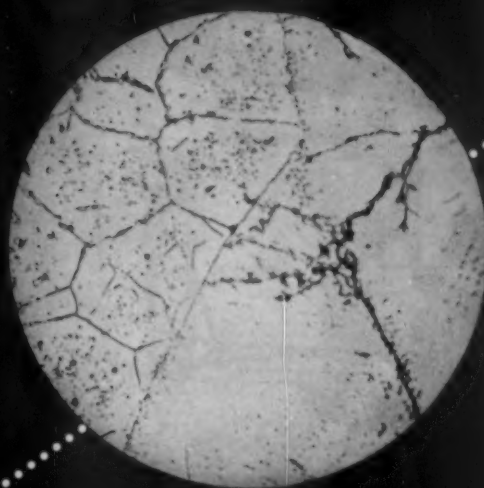
That's the big news to come from the three-year research project sponsored by the Hawaiian Sugar Planters Assn., which is now in the final report-writing stage. At one stage—a year or two ago—it was thought the mill dream was impractical, but demand for a quality pulp on the mainland of U.S.A. and elsewhere is rising fast. And the demand for fiberboard is also high.

Anticipating favorable reports, a planters' business team headed by Frederick Simpich, Jr., vice president of Castle & Cook, is already exploring the most advantageous means of producing, shipping and marketing such products.

As reported earlier (PULP & PAPER, April, 1955), Mr. Simpich recently toured the U.S.A. and Canada, talking with engineers, machinery builders, research men, market executives, etc., regarding equipment, engineering and other mill needs.

It is premature, says T. J. Nelson, assistant to HSPA's by-products coordinator, to predict what products might receive initial attention in a commercial operation. Nevertheless,

Here's a better solution to a tough Corrosion Problem



.....Carpenter 7Mo Stainless Tubing & Pipe

The corrosion-inviting cracks in the right-hand section of the photomicrograph above end abruptly as they near the center of the picture...and that quick ending may help you find a quick ending to stress corrosion cracking problems.

The picture is Carpenter 7Mo stainless pipe (left) welded to a Type 316 fitting. It is still unaffected by the stress corrosion cracking that has destroyed the usefulness of the fitting. The pipe outlasted three such fittings before the photomicrograph was made.

The stout resistance of Carpenter 7Mo to stress corrosion cracking, even in the presence of chlorides

or other caustic and sulphite solutions, is coupled with excellent resistance to general corrosion and pitting. It has been used as a "problem solver" in food and chemical processing plants, pulp mills, petroleum refineries and other places. There may be a profitable place for it in your operation. We'll be glad to work with you, aid you in investigation of your problems and a possible 7Mo solution.

MEMBER



**The Carpenter Steel Company,
Alloy Tube Division, Union, N. J.**

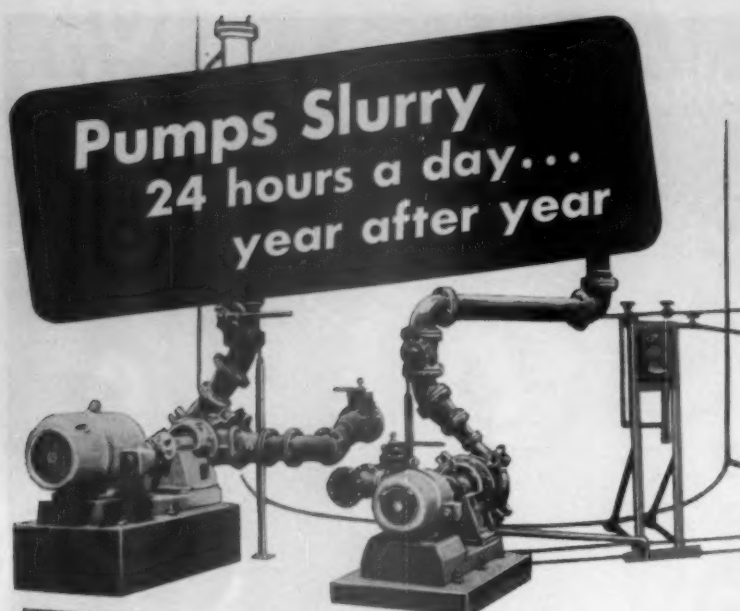
Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"



*Write for your copy of the
Carpenter 7Mo Technical
Bulletin containing compre-
hensive data.*



Stainless Tubing & Pipe



● MORRIS TYPE R SLURRY PUMP at the left is on continuous 24-hr. duty delivering 1000 GPM of a 170° lime slurry at 100' head. Fifty-HP motor operates at 1180 RPM. Intermittent-duty pump at right delivers 200 GPM at 50' head with 7½-HP motor turning at 880 RPM.

In slurry-handling operations, "long-term service" is a meaningless claim unless the pump will work day-in and day-out with a minimum of maintenance time, trouble and expense

Morris Type R Slurry Pumps—with an established reputation for longer life—also incorporate in their design exclusive features which result in easier installation . . . fewer interruptions to service...less overhaul...fewer replacements.

To provide uninterrupted service . . .

The gland is under suction pressure only. This reduces leakage and dilution . . . keeps harsh abrasives out of the stuffing box . . . practically eliminates packing troubles.

There are no internal studs or bolts. Caustic and corrosive solutions cannot seep past threads and cause maintenance headaches.

To make installation and dismantling easy . . .

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GEORGE W. ALJIAN (left), Coordinator of Hawaiian Sugar Plants Assn., whose plans for a market bagasse pulp mill or large pulp-paper operation in Hawaii are taking on more definite form. He is also Director of Purchasing and Packaging for California and Hawaii Sugar Refining Corp.

WILLIAM A. ROBINSON (right), Paper Technologist for the association, who attended June 1955 American Superintendents Convention in Ohio and was recently traveling on continent in interests of the project. He is a former Tech Director of operations executive in Southern and Pacific Coast mills in U.S.A.

he adds, whatever plans are made, their nature will have been determined by the results of this attention in 1955.

One of the biggest suppliers of sugar cane bagasse in the world is in Hawaii, amounting to 1,000,000 tons annually. It is a suitable raw material for paper or board or for market pulps—the markets were the primary problem. Hawaii's interest in pulping this fibrous material has ranged from corrugating medium to bleached pulp.

George W. Aljian, coordinator of HSPA, is on loan from the C&H Sugar Refining Corp., San Francisco, to expert the search for markets. C&H is the refining and marketing organization which handles the entire Hawaiian sugar output.

Mr. Aljian is under technical guidance of Dr. L. D. Bayer, director of the experiment station and the by-products advisory committee, which Mr. Simpich has headed since its organization. Two paper technologists, William A. Robinson and S. B. Knapp, are also continuing their activity into 1955. Mr. Robinson was formerly a technical director or technician in Southern U.S. Mills, at Atenquique, Mexico, and with Fibreboard in East Antioch, Calif., U.S.A.

The 1,000,000 tons of dry bagasse, if separated, would yield 600,000 tons of fiber and 400,000 tons of pith. One drawback is that bagasse now provides an economical fuel for the plantation factories and its use for pulp or paper would require importing other fuels.

At present, major components in paper imports are board for shipping cases; newsprint, mulch paper for weed control; plus the tissue, grocery bag and many sundry items which enter the typical American picture.

Here's how you can profit with Du Pont Peroxides and Bleaching Processes

... in bleaching sulfate pulp

Peroxide bleaching with the Du Pont process can give you a better-selling combination of brightness and strength for kraft. You can bleach sulfate pulps to high brightness with good strength characteristics... or normal brightness with premium strength.

Your yield stays high, since there is little or no loss due to bleaching. And the bleached pulp is highly uniform... variations that

occur in multi-stage bleaching are smoothed out by the process.

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You can produce high-grade pulp from low-grade waste paper with the Du Pont Peroxide Process. Your pulping time is cut... your yields improved. Recovered pulp is bright, strong, stable, and highly uniform—regardless of groundwood content.

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AFRICA

SOUTH AFRICA

Mills of All Kinds Being Built; Uses Wattlewood for Rayon Pulp

Population: 13,000,000; *Per capita paper consumption:* 34 lbs.

Paper and/or board mills: 9 (including 2 start-ups in 1954)

Chemical woodpulp mills: 4 (including one non-integrated for rayon)

Bagasse mills: 1

**Production (short tons)* 1954 1953

Paper and board 90,000 75,000

Chemical woodpulp . . . 35,000 25,000

Straw & other pulp . . . 6,000 3,000

Paper and board

imports 130,000 150,000

Woodpulp imports . . . 5,000 5,000

Principal paper grades made: Paper-

board, Book and Writing, Wrapping,

Kraft

Principal paper imports from: U. S.,

Canada, U. K., Scandinavia

Principal woodpulp imports from: Scan-

dinavia

Principal paper exports to: Rhodesia

A big expansion program continues in the Union of South Africa. Increased competition from abroad made the home sales force work harder but at year's end all domestic production was sold.

This dominion within the British Commonwealth is the principal division of Southern Africa. Its 472,550 sq. miles is almost 10 times that of

New York State's 49,576 and its population of some 13,000,000 is comparable to that of New York and New Jersey combined.

One new integrated pulp and paper mill, the Tugela mill of South African Pulp & Paper Industries, Ltd., went into full production of some 100 tons of kraft a day. Their Enstra mill completed its expansion and began production of bleached printing and writing papers.

Here follow two special reports to PULP & PAPER.

**By J. E. Henderson, General Manager,
South African Pulp & Paper
Industries, Ltd.**

The commissioning of our new kraft paper and pulp mill at Tugela in Zululand, was the major event in 1954 in the industry. Production was achieved in June, and by year's end we had marketed fair quantities of acceptable kraft liner, fluting, wrapping and bag papers.

Furnish included varying percentages of eucalyptus saligna woodpulp, which has proven quite suitable. Tests have also shown that it will be possible to make sack paper in the Union from the types of raw material available.

At our Enstra mill the extensions begun in 1952 were completed and production of bleached printing and writing papers has gone even ahead.

Progress was made in 1954 in installations of new machines at S. A. Board Mills boxboard mill at Springs, Ngoye Paper Mills kraft mill at Felixton and S. A. Adamas' fiberboard mill at Port Elizabeth.

Work also continued on the large dissolving pulp mill under construction at Umkomaas in Natal, which is now expected to reach production in late 1955.

Demand for all grades of paper and board continued to grow in 1954, but increased competition from overseas mills and falling world prices coupled with more generous currency allocations to importers, caused local mills' sales organizations to work harder for their orders than has been the case for many years. Despite these difficulties, practically all local output was disposed of and the order position for all mills is relatively firm.

REPORT ON SIX WEEKS TRIP

**By Hans Baars
Pulp & Paper Mill Engineer,
Cape Town**

I recently completed a six-week trip over 4,500 miles of roads in South Africa. It is amazing that a country with such a small white population and small communities can build such excellent roads. However, some of the side roads are bad, especially after heavy rains, as in Natal.

The new Transvaal mill of S.A.



New Air View Of Expanded Mill

Enstra Mill of South African Pulp & Paper Industries Ltd., only producer of bleached printing and writing papers. Improvements include enlargement of pulp mill for fifth digester and bleach plant. This mill has a new (1952) 120 in. Walmsley Fourdrinier.

problems in water conditioning...



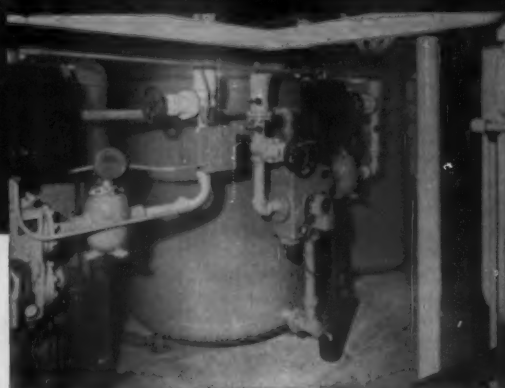
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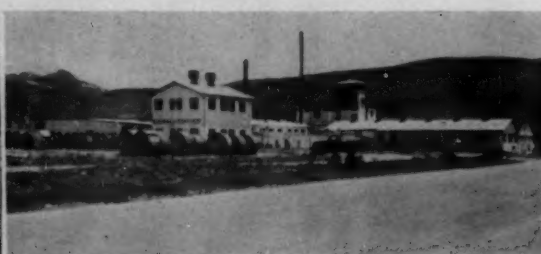
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More Fiberboard in Demand

New Italian paper machine with modern stock preparation is going into this Port Elizabeth, Cape Province mill of S. A. Adamas Fibreboard and Paper Mill (Pty.) Ltd.



Makes Molded Products

This modern plant of Messrs. O. Bakke & Co., Ltd. makes molded products from waste paper pulp at Paarl, Cape Province.

Board Mills Ltd. is now running at capacity, serving the densely populated area around Johannesburg and Pretoria, where people used to get their supplies from the large Durban mill of this same company.

The Durban mill has installed a semi-chemical pulp mill, processing hardwood and bagasse to make up for the waste paper required by the new mill at Transvaal. Greater variation in qualities, from cheap chipboards to white lined and coated qualities, is possible through the new semi-chemical pulp.

Emphasis has been on quantity for the last 10 years to save exchange, but now this company is seriously aiming at quality and is improving the mill accordingly.

S. A. Board Mills is also busy building a felt paper mill at Durban to supply a newly established processing company, Balatum South Africa (Pty.), Ltd.

Ngoye Paper Mills is well under way with the installation of its second paper machine, parts of which have already arrived from Austria and Germany. Quality of fluting made by this Zululand mill has become popular with the corrugating industry. Additional pulping equipment is also being installed to supply bagasse pulp to the new machine, expected to start up in late 1955.

Cellulose Products Ltd., the small tissue paper mill in Johannesburg, has been bought by a Swedish company which is improving the layout to

make more and better paper. This mill also includes a converting plant for toilet rolls, sanitary towels, and paper handkerchiefs.

Two fiberboard mills, Trans-African Paper Products near Johannesburg and the larger S. A. Adamas Fibreboard and Paper Mill in Port Elizabeth, Cape Province, have been busy. The latter is erecting an Italian paper machine with modern stock preparation plant alongside the board mill. This machine is also expected to be running at year's end.

WATTLEWOOD FOR DISSOLVING PULP—Ahead of schedule, the 120-ton-a-day rayon pulp mill of S. A. Industrial Cellulose Corp., Natal, was to start up some departments in mid-1955. Interesting is that wattlewood is now used by one of the parent companies, importing it from South Africa. The principal raw material for the South African mill had been planned to be eucalyptus wood.

Imported pulp will be used for a greaseproof paper mill to be built in the Transvaal.

Plans to build a small strawboard mill in Cape Province have not yet been materialized, but preparations are still going on.

Molded pulp products have been made from waste paper in a mill near Cape Town for several years. Another company is now building a second factory for molded pulp articles at Cape Town; probably waste paper and imported pulp will be used.



Wattlewood For Dissolving Pulp

New 120-ton rayon pulp mill of S. A. Industrial Cellulose Corp. in Natal, Union of South Africa, which was expected to start up July, 1955. Imported wattle wood will be used, although original plans were for eucalyptus wood.

There are two wallboard mills in the Union, both in Natal. The one Masonite mill makes hard and soft boards; the other mill makes hardboards by the Asplund Defibrator process; both mills use wood. Between them a lively competition is going on.

In Cape Province, the Novobord chipboard mill, where heavy boards are made from wood chips bonded with resins by a patented process, has proven a success and expansion is planned. Another chipboard mill is to be erected in the Transvaal.

In neighboring Swaziland, Peak Timbers Ltd., is completing a chipboard mill in the midst of its beautiful pine forests.

EGYPT

Government Plans Mill To Use Papyrus or Stalks

Population: 22,000,000; Per capita paper consumption: 11 lbs.

Paper mills: 8

Straw or vegetable fiber mills: 1

Production (short tons)

Paper	25,850
Straw & other pulp	3,300
Paper imports	62,000
Paper exports	1,000
Woodpulp imports	9,350

Principal paper grades made: Sulfit Book and Writing, Paperboard

Principal paper imports from: Scandinavia

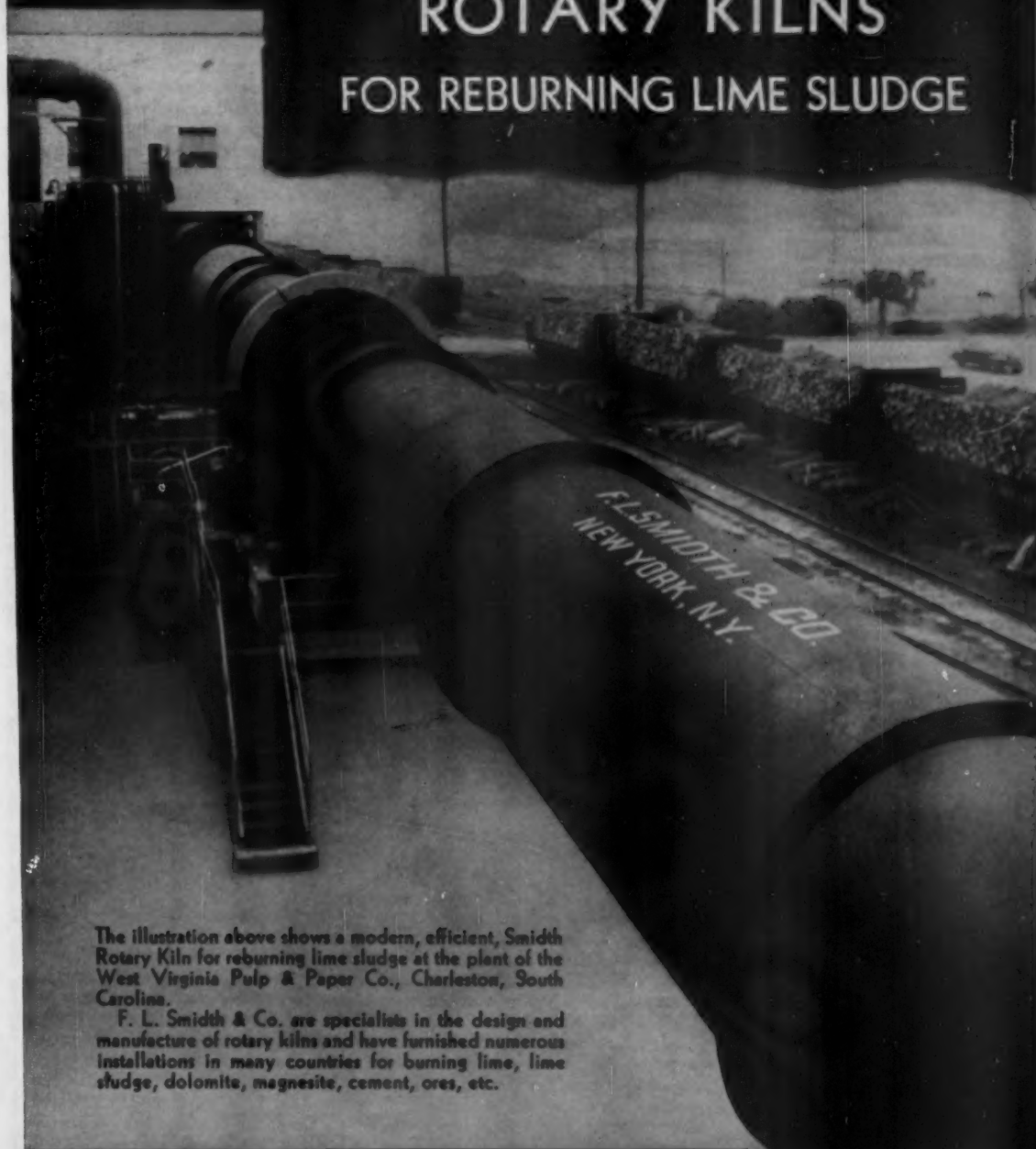
Principal woodpulp imports from: Scandinavia, Canada, U.S.A.

Principal paper exports to: Middle East

Forests are conspicuous by their absence in Egypt, totaling only a mere 3.86 sq. mi. but the Egyptian government has plans for a 30,000-ton-a-year mill using agricultural residues—cereal straw, cotton stalks, bagasse, and perhaps papyrus and bamboo.

It issued an invitation to paper mill and machine builders who might be interested in setting up the new mill, which reportedly will produce 33,000 tons yearly of paper and board. Details on the construction of the mill and of a U.S.A.-built paper machine for it are expected momentarily.

SMIDTH ROTARY KILNS FOR REBURNING LIME SLUDGE



The illustration above shows a modern, efficient, Smidth Rotary Kiln for reburning lime sludge at the plant of the West Virginia Pulp & Paper Co., Charleston, South Carolina.

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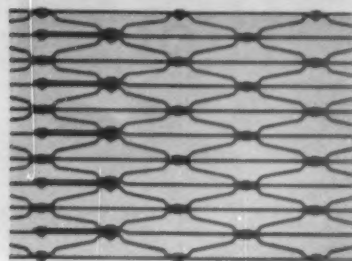
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AFRICA

Egypt is the largest consumer of paper in North Africa and the next largest on the continent to the Union of South Africa, using an estimated 16% of all paper consumed. No pulp is produced at present in Egypt.

Woodpulp is regarded as essential to the local industry and import licenses are freely granted by the Department of Finance. Bleached sulfite pulp imports accounted for 75% of pulp imports in 1954. A new rayon yarn plant began production in 1954, importing 275 short tons and 1955 imports are expected to be around 1,320 short tons.

Some of Egypt's papermakers blend small quantities of kraft pulp and bleached sulfite pulp with rice straw and waste paper. They recently requested Egyptian authorities for additional customs protection against imported paper.

The recent survey undertaken by the Egyptian government is presumably completed. This was a study of local papermaking raw materials to evaluate their suitability. Another study concerned marketing conditions and existing mills' capacities.

NORTH AFRICA

More Mills To Use Grasses;
Major Supplier of Esparto

North Africa's 60,000,000 people use from 11 lbs. in Algeria to less than 1 lb. in other areas per person per year.

Paper Production	60,000 tons
Exports (esparto grass to Britain, France, Spain)	330,000 tons

The forests of North Africa cover only 1% of the total land area or an estimated 3,081 sq. mi. The African continent contains a total of more than 3,084,661 sq. mi. of forests; 27% of its land area. In North Africa some 1,931 sq. mi. of forests are accessible.

Africa's increased awareness of its economic potentials has created a corresponding consciousness of its forest wealth. Drawn by the abundance of raw material for their pulp mills, Germany and France, who have growing need for abundant raw materials, have been lured to Africa to study possibilities for pulping some of the native woods.

France has gone to her colonial possessions to experiment with grasses and tropical and sub-tropical woods.

However, France is still hesitant, preferring possibly to develop more fully the pulping prospects of her own straws and temperate hardwoods in metropolitan France.

New mill plans include three mills in French North Africa: At Morocco, a 27,500-ton chemical pulp mill using esparto grass; at Qued Eilil, a chemical pulp mill to use esparto grass, and a 22,000-ton-a-year chemical pulp mill will use eucalyptus.

Three mills already in operation near Casablanca produce a total of about 25,000 tons of newsprint yearly as well as other paper grades.

Interest has been stimulated in possible use of the large amount of alfalfa grass available in North Africa.

No further word has been heard on a new 60,000-ton-a-year paper mill to be built in Tunisia.

Considerable expansion is in the works for a new mill near Algiers, which now makes 26,000 tons of writing and printing paper.

French North Africa has averaged 330,000 short tons of esparto to Europe, mainly to Great Britain. In recent years, Libya has developed a considerable export trade in esparto.

MIDDLE AFRICA

Mills Built in Remote Lands;
Extract Fiber from Live Tree

Population—92,000,000. Includes Liberia, the Cameroons, Rhodesias, Congolands, French West Africa, British and Portuguese East Africa, Ethiopia. Per capita consumption of paper—1 to 3 lbs.

Apart from two mills in Southern Rhodesia, making wrapping paper and boards, there are no pulp or paper mills in Southern Africa except those in the Union of South Africa.

Reports continue about plans to set up mills in Portuguese East or West Africa. A small mill in Mozambique has reached a serious discussion stage and investigation. There is a small chipboard plant at Livingstone, Southern Rhodesia.

According to the American Paper & Pulp Assn., a new pulp mill has been set up at Lindi in the southern province of Tanganyika, using the baobab or monkey bread tree for its raw material. David Oberstein, a director of the company, Cellulose Fibre (Tanganyika) Ltd., developed the process for using this tree and full production is rated at 400 tons a month.

Reportedly, the operation calls for fiber extraction made from the standing tree. Some years after, the tree is completely re-formed and the extraction process may be repeated. New trees may be planted from seed, maturing in 16 years.



AFRICA

In the event that this project proves as successful as anticipated by Mr. Oberstein, additional plants will be erected at Dar es Salaam, Dodoma and Tanga.

Another company is reportedly setting up a cellulose mill at Mayumba with a capacity of 50,000 tons yearly from about 250,000 tons of wood. Output from this mill is reported destined for the U.S.A.

At Luanda, Portuguese Africa, an integrated pulp and paper mill is said to be under construction with a capacity of 12,000 tons of bagasse pulp and 2,000 tons of newsprint.

The Government of Liberia has granted a 250,000 acre concession to the German Society for the Utilization

• Over 70 correspondents from nearly 50 nations and territories sent exclusive, on-the-spot reports to PULP & PAPER for this World Review.

of Vegetal Raw Materials. This organization is interested in setting up forest products industries utilizing Liberia's 3,081 sq. mi. of accessible forests.

Studies have been conducted in this region to find a forest area capable of supplying a mill with a capacity of 110,000 short tons annually.

BELGIAN CONGO

May Use Papyrus for Paper

Population: 11,259,000; Per capita paper consumption: 11 lbs.

Pulp and paper mills: none

Paper imports (short tons) 14,000

Principal paper grades imported: Newsprint, Wrapping, Board

Principal paper imports from: Canada, U.S., Union of South Africa, Sweden, Finland.

Conflicting reports continue to come about possibility of setting up a paper industry in Lake Leopold II region.

SEEK TO USE PAPYRUS—Several syndicates have been studying the possibility of creating a pulp industry in the Belgian Congo. Several studies have been made on the papyrus which abounds on certain lakes of the colony. Lake Leopold II region is of special interest to the government at Leopoldville because of the nearby port of Leopoldville, where navigable routes are open in all seasons of the year.

According to the Kredietbank of Brussels, one project envisages the erection of a 30,000-ton pulp mill near Lake Leopold to use tropical wood. It would, at a later date, be expanded to 100,000 tons.

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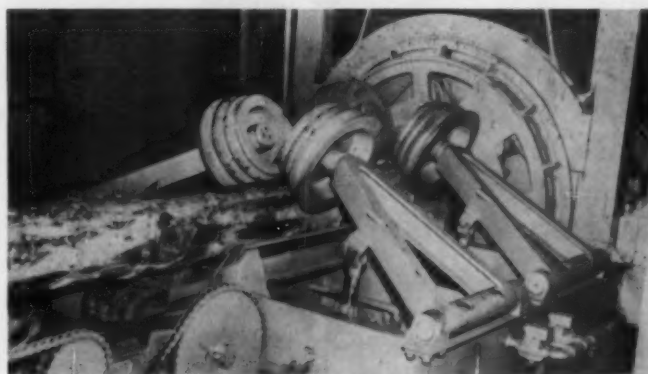
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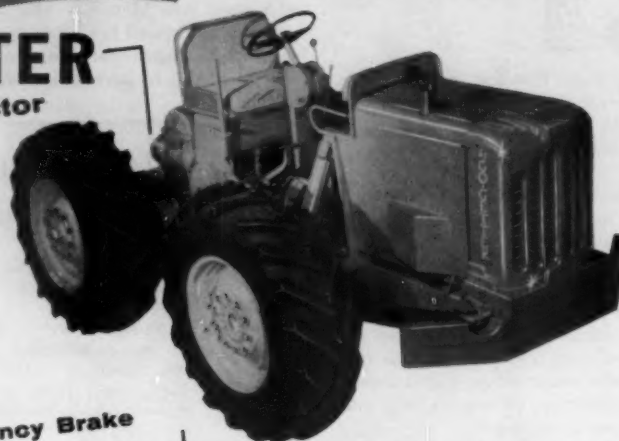
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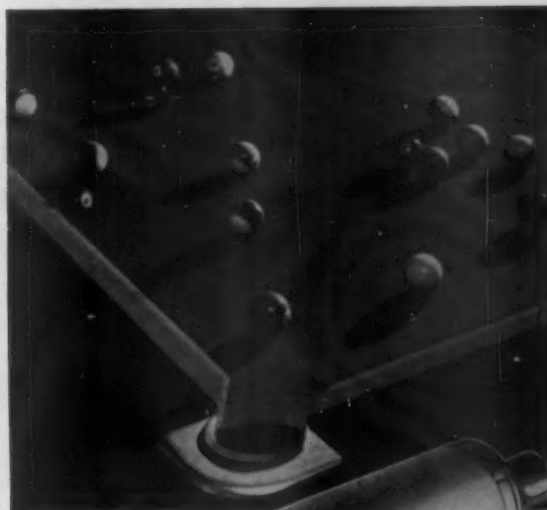
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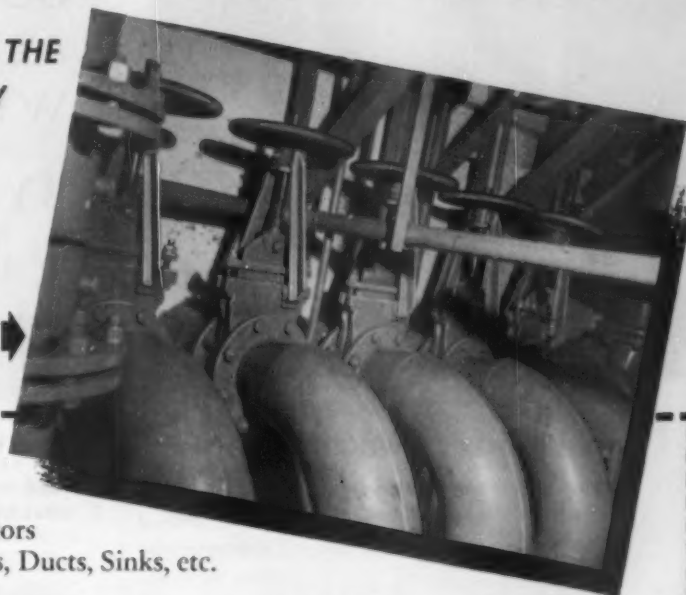


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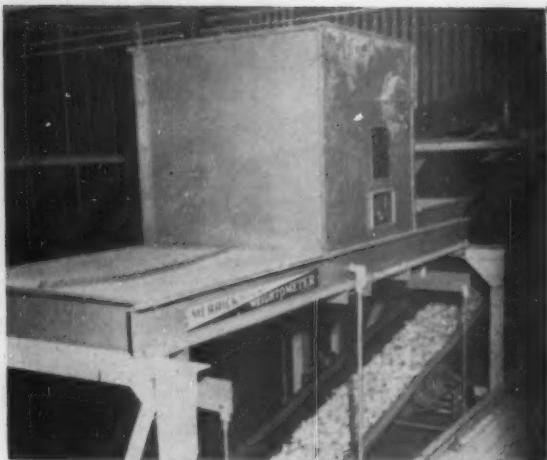
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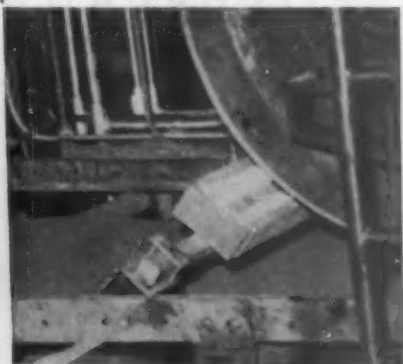
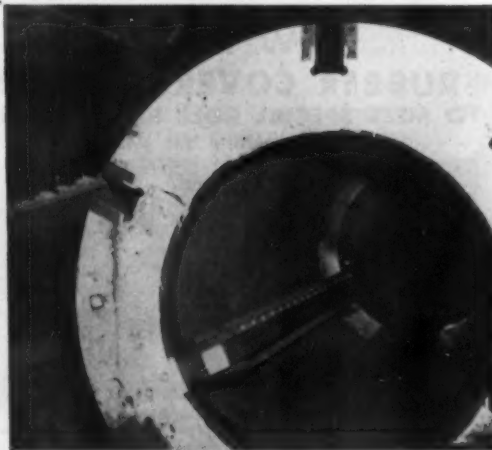
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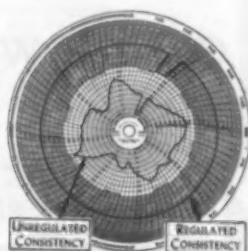
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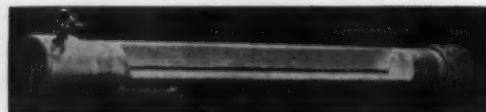
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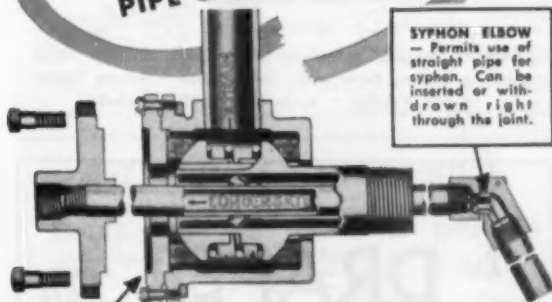
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EQUIPMENT • MATERIALS • SERVICES
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Acer, McLernon Inc.	100	Geigy Chemical Corp.	185	Pagel, Horton & Co.	108
Alan Wood Steel Co.	251	General Dyestuff Co.	19	Pandia, Inc.	52-53
Alaskan Copper & Brass Co.	253	Walter S. Gordon	255	Parsons & Whittemore, Inc.	119
Albany Felt Co., Inc.	47	Coslin-Birmingham Mfg. Co.	18	Pennsylvania Salt Mfg. Co.	38
American Air Filter Co.	76	Gottesman & Co.	78	B. F. Perkins & Son Inc.	145
American Cyanamid Co., Paper Chemicals Dept. ... inside front cover		W. R. Grace & Co.	124	Perkins-Goodwin Co. outside back cover	
American Delibrator Co., Inc.	74	Green Bay Paper & Pulp Co.	127	Powell River Sales Co.	115
American Hard Rubber Co.	235	Griffith Rubber Mills	221	Process Evaluation & Development Corp.	124
American Potash & Chemical Corp.	150	Grinnell Co., Inc.	39	Puget Sound Pulp & Timber Co.	93
Appleton Machine Co.	151	Gruendler Crusher & Pulverizer Co.	191	Pulp Bleaching Co.	245
Appleton Wire Works, Inc.	225	H. K. Equipment Co.	249	Pulp Sales Corp.	105
Appleton Woolen Mills	183	Elof Hanson, Inc.	110	Pusey & Jones Corp.	62
Asten-Hill Mfg. Co. ... inside back cover		Harland Drives Ltd.	189	W. H. Ramo	255
Babcock & Wilcox Co.	7	Hart Moisture Meters	252	Raybestos-Manhattan, Inc.	249
Bagley-Sewall Corp.	52-53	John J. Harte Co.	255	Rayonier Inc.	125
Bailey Meter Co.	42	Hercules Powder Co.	63	Red-Ray Mfg. Co., Inc.	250
Bathurst Power & Paper Co. Ltd.	101	Hooker Electrochemical Co.	73	Restigouche Co., Ltd.	126
Bauer Bros.	223	Howard Smith Paper Mills Ltd.	98	Reynolds, Smith and Hills	255
Beloit Iron Works	33-34	Howe Sound Pulp Div.	99	Rhodia, Inc.	12
Bingham Pump Co.	51	Hubinger Co.	2	Rice Barton Corp.	1
Bird Machine Co.	141	Huntington Rubber Mills	217	Riegel Paper Corp.	107
Black-Clawson Co. Divs.: Shartle Bros. Machine Co.; Dilts Machine Works; Bagley-Sewall Corp.; Pandia, Inc.	52-53	F. C. Huyck & Sons	57	J. O. Ross Engineering	193
John W. Bolton & Sons, Inc.	23	Hygrotester, Inc.	22	Ross Midwest Fulton Corp.	205
Borregaard Co., Inc.	114	Improved Machinery, Inc.	15	Rotaread Corp.	172
Brea Chemicals Inc.	231	Infilco Inc.	60	Rust Engineering Co.	255
Buckman Laboratories, Inc.	31	International Nickel Co.	177	St. Regis Paper Co.	90
Buckley, Dunton Organization	113	Irving Subway Grating Co.	244	Walter A. Salmonson	254
H. W. Butterworth & Sons Co.	247	Jackson & Church Co.	61	Sandusky Foundry & Machine Co.	232
Cable Wire Co., Inc.	252	G. D. Jensen Co., Inc.	253	Sandwell & Company Ltd.	255
Cameron Machine Co.	67	Johnsen, Jorgensen & Wettre, Ltd.	111	Sandy Hill Iron & Brass Works	215
Canadian Chemical & Cellulose Co. Ltd.	123	Johnson Corp.	253	Saran Lined Pipe Co.	68
Canadian Forest Products Ltd.	99	Alvin H. Johnson & Co.	255	C. D. Schultz & Co. Ltd.	254
C. I. Capps Corp.	246	E. D. Jones & Sons Co.	9	Scott Paper Co.	103
Carpenter Steel Co., Alloy Tube Div.	237	Kalamazoo Vegetable Parchment Co.	77	Shartle Bros. Machine Co.	52-53
Carthage Machine Co.	187	Knox Woolen Co.	254	Shuler & Benninghofen	247
Cellulose Sales Co.	117	Samuel M. Langston Co.	227	Signode Steel Strapping Co.	209
Central National Corp.	130	Laucks Laboratories Inc.	16	Simonds Saw & Steel Co.	27
Chain Belt Co.	159	Lindsay Wire Weaving Co.	10	J. E. Sirrine Co.	5
Chemipulp Process Inc.	64	Link-Belt Co.	69, 207	F. L. Smith & Co.	243
Chemsteel Construction Co.	254	Link-Belt Speeder Corp.	173	Ray Smythe Co.	66
Chicago Bridge & Iron Co.	30	Lodding Engineering Corp.	175	Sonoco Products Co.	8
Clinton Foods, Inc.	236	A. H. Lundberg, Inc.	229	South Western Gear Works	58
Cochrane Corp.	241	Lyddon & Co., Inc.	119	Spencer Chemical Co.	45
Columbia Cellulose Co. Ltd.	123	MacMillan & Bloedel Ltd.	126	Sprout, Waldron & Co., Inc.	54
Combustion Engineering, Inc.	199	Chas. T. Main, Inc.	255	Stauffer Chemical Co.	248
Conveyair Co. Ltd.	253	Manhattan Rubber Div.	249	Stebbins Engineering & Mfg. Co.	28
Corn Products Sales Co.	75	Mason-Neilan Regulator Co.	152-153	Stevenson & Rubens	255
Crane Co.	46	Mead Sales Co.	95	Stowe-Woodward, Inc.	59
Curlator Corp.	37	Merrick Scale Mfg. Co.	250	Sumner Iron Works	17
DeZurik Shower Co.	251	Merritt-Chapman & Scott Corp.	226	Sutherland Refiner Corp.	72
Dilts Machine Works	52-53	Milton Roy Co.	160-161	Swenson Evaporator Div.	216
Dorr-Oliver, Inc.	128-129	Minerals & Chemicals Corp. of America	29	Swift & Co.	233
Dow Chemical Co.	68	Minneapolis - Honeywell Regulator Co.	70-71	Syntro Co.	222
Downingtown Mfg. Co.	13	Mixing Equipment Co., Inc.	211	C. T. Takahashi & Co.	112
Draper Brothers Co.	254	C. C. Moore & Co.	246	Texas Gulf Sulphur	26
Joseph H. Dupasquier	252	Morden Machine Co.	65	Thew Shovel Co.	149
E. I. duPont de Nemours & Co., Inc., Electrochemicals Div.	239	Morris Machine Works	238	Tidland Machine Co.	165
E. I. duPont de Nemours & Co., Inc., Pigments Div.	50	D. J. Murray Mfg. Co.	16	Titanium Pigment Corp.	11
East Texas Pulp & Paper Co.	97	Nash Engineering Co.	180	Truscon Laboratories	201
Eastwood-Nealley Corp.	234	National Aluminate Corp.	25	U. S. Rubber Co.	169
Frank W. Egan & Co.	40	Nichols Engineering & Research Corp.	24	Valley Iron Works	219
Eichleay Corp.	20	Nicholson Manufacturing Co.	245	Vulcan Copper & Supply Co.	44
Electrical Construction Co.	255	Nopco Chemical Co.	55	R. M. Wade & Co.	255
Emerson Mfg. Co.	23	Northwest Copper Works, Inc.	14	Walworth Co.	41
Fabri-Valve Co. of America	191	Northwest Engineering Co.	252	Warren Steam Pump Co., Inc.	195
Fitchburg Screen Plate Co.	249	Northwest Lead Co.	245	Washington Iron Works	43
Foxboro Co.	32	Norton Co.	36	Waterbury Felt Co.	254
Freeport Sulphur Co.	35	Roderick O'Donoghue	255	H. Waterbury & Sons Co.	248
Fuller Co.	48	Olin Mathieson Chemical Corp.	21	West Virginia Pulp & Paper Co.	92
		Pacific Gear & Tool Works	58	Western Gear Works	58
		Pacific National Bank	252	Weyerhaeuser Timber Co.	109
				Whiting Corp.	216
				Williams-Gray Co.	254
				Wisconsin Wire Works	253
				Woodpulp, Inc.	116
				Yarnall-Waring Co.	49



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